ANNUAL RATES OF SUBSCRIPTION.

Farmers, Graziers, Horticulturists, and Schools of Arts, **One Shilling.** Members of Agricultural Societies, **Five Shillings,** including postage. General Public, **Ten Shillings,** including postage.

VOL. XXXVII. 1 MAY, 1932. PART 5.

Event and Comment.

Anzac.

THROUGHOUT Australia the Anzac Anniversary (25th April) was commemorated fittingly, reverently, and proudly. The events of the years of war, and the part of Australia and New Zealand in those events, have become a memory, but a memory that loses nothing in vividness with the passing of the years—a memory of happenings and achievements that, to-day, is invested with even a deeper and richer significance. It was a day of remembrance with sorrow, but a greater pride in the tradition created by those young men of our land who "in a moment became the living theme of boys unborn for countless centuries, peers of the noblest souls whom God has fired, part of the amplest feat of history." Maeterlinck has suggested in a beautiful way that the dead always live when the living think of them; and that regarding heroism, the world is hermetically sealed—none of it escapes, and the heroism of those who giving all gained all, seeking neither lament nor praise, remains behind for those who survive. Of the Gallipoli adventure nothing material remains but rows and rows of simple stones in wayside cemeteries, yet while our age endures every ridge they fought over will stand as a monument to the men who fell, and those now falling under the merciless barrage of time; and every valley they traversed will ring with lasting memories. "Those silent graves will be wet with the tears of unfailing dew; sunrise and sunset will gild them with glory; and night with its myriad glittering eyes will keep constant vigil o'er them."

Dairying in the Dominion.

"THE uniformity of the dairy herds is much better in New Zealand than in Queensland, and the dairy cattle in the Dominions are certainly great milk producers," said the Minister for Agriculture and Stock (Mr. H. F. Walker), in the course of a recent review of the dairying industry of New Zealand. In company with representatives of the New Zealand Co-operative Dairy Company, Limited, Mr. Walker travelled recently through the Waikato district, one of the chief dairying areas of the Dominion. He said he was informed that the best of that land would carry an average of seven sheep to the acre all the year round, and one milking cow

to the acre was quite common. This was due to the fact that English grasses had been introduced, and the soil was sweetened by carrying out pasture dressing under the guidance of the New Zealand Department of Agriculture. There appeared to be very little waste land on the holdings of farmers, the whole of the areas being used. That was different from the state of affairs in this State. Although the price of commercial butter was approximately 2d. per lb. less than was paid in Queensland, due to the fact that there was no stabilisation scheme and no butter pool, yet some of the land returned solely from dairying 190 lb. of butter-fat an acre a year, equal to approximately 230 lb. of commercial butter. That was a phenomenal yield compared with Australian standards.

Two methods of fodder conservation were practised; the first, by making hay of the natural pasture, and the second, by making stack silage of the natural pasture. The conservation of fodder was becoming more popular every day. About 75 per cent. of the dairy cows were Jerseys or grade Jerseys, and Friesians seemed to come next in numbers He also was greatly impressed by the large amount of dehorning which was carried out. About 90 per cent. of dairy farms were equipped with milking machines.

The factories of the New Zealand Co-operative Dairy Company, Limited, which he visited, were equipped with modern machinery, and, because of the company's large operations, considerable economies were effected in the cost of fuel, the company having its own coalmine at Huntley, which supplied coal for all factory plant as well as to outside concerns. Additional economies were effected in the price of butter boxes and cheese crates, the company having a case mill at Frankton Junction, where boxes and crates were manufactured. The output of skim milk powder from the milk factory at Waitoa amounted last year to 2,800 tons, manufactured from 7,600,000 gallons of milk. Practically all milk powder produced was exported, the price received last season being £35 per ton, f.o.b., Auckland. A considerable quantity was used on ships for the manufacture of milk. Condensed milk and baby food were also manufactured at Waitoa. The cheese factory at Manawaru was the most up-to-date in New Zealand, the annual output being 850 tons. All cheese was pasteurised, the manager of the factory being of the opinion that pasteurisation was absolutely necessary.

Pasture Improvement.

"ONE of the big problems of Western Queensland, and one of the problems which calls for research, is the conservation of fodder, such as Mitchell grass, in good years, to cope with the depression period of bad years," said Mr. W. Davies, M.Sc., lecturer in agrostology at the University of Aberystwyth, Wales, in the course of an address on "Pasture Improvement," which he delivered to members of the Royal Society of Queensland at their annual meeting on 26th April. In the course of an interesting address, Mr. Davies said he had travelled 20,000 miles in Australia in six months, studying cross-sections of pasture lands in each State. So far as Queensland was concerned, it seemed to him that the main problems connected with pasture improvement could be summed up in the renovation and mechanical treatment of pastures; in which connection the introduction of a legume, such as white clover, held possibility of success; and the introduction of winter-growing grasses, such as rye grass, the possibilities of which had been shown by experiments conducted by the Department of Agriculture at Maleny and in the Ingham district. One of the biggest problems of the West that needed research was the conservation of fodder. He had been told that Mitchell grass fodder could be produced, stacked, and conserved for about £1 5s. a ton. Whether this would be an economic proposition was a matter for investigation. The importance of grass land was emphasised by the fact that of Australia's total exports of all kinds, 60 per cent. approximately were direct products from grass land, and these included meat, wool, and dairy produce.

Dealing specifically with the problems of agrostology, Mr. Davies said that one of the most important was the use of artificial manures. The grass crop, just as any other form of crop, required to be manured. The main elements of plant food required, and which were often deficient in soils, were phosphoric acid, nitrogen, lime, and potash. Each were essential elements, and every crop tended to deplete the soil of these valuable food substances to quite an appreciable extent. The soil, therefore, had to be replenished by the fertilizer ingredients so depleted. Finally, there were the problems connected with the proper management of their grasslands. This involved the utilisation of the grass that grew at the stages when the product was at its most nutritious stage, and when the grazing animal could make the most of it. It had been found by experiment that young leafy grass was more valuable

than old over-matured grass. This finding had caused the agrostologist to look for a sound, practical method of grazing stock on short grass. The system involved the use of relatively small paddocks, changing the stock around from paddock to paddock in rotation, so that as the grass in one paddock was grazed down, the stock went in on to fresh grass in the next paddock, and so on. The mechanical cultivation of their grasslands was an important section of pasture management. This included the renovation of paspalum pastures, which was of paramount importance to the east coast of Australia.

Tobacco Seed.

TOBACCO growers who intend to raise tobacco seed for future planting are required to notify the Under Secretary, Department of Agriculture and Stock, Brisbane, of their intention to do so. The Commonwealth Health Department will not grant permission for seed to be marketed or retained for sowing unless it is certified to be free from disease, and consequently this will necessitate an inspection of the growing plants before the seed is harvested.

For the information of persons who may contemplate the production of tobacco seed, the Department of Agriculture advises that the plants selected for the purpose should be those only which are typical of the variety, of vigorous uniform growth, exhibiting other desirable characteristics and free from disease. Care should be taken to eliminate the possibility of cross fertilization with other varieties, which may be growing in the vicinity. This could be done by covering the flower head with a paper bag. When about eighty capsules have been formed the remaining unopened flowers and secondary shoots should be removed, as the whole strength from the plant needs to be concentrated in the fullest development of the seed already formed.

As a further precaution against the dissemination of disease, the Commonwealth Director-General of Health requires that seed, before being planted, should be treated with silver nitrate solution, 1 part in 1,000 parts water, for ten minutes, then washed and dried. This process to be repeated, the double treatment giving a greater assurance of all the seed being properly wetted.

Full information in connection with the measures to be adopted for the production of seed was given in the August issue of the Journal, and also in the pamphlet "Tobacco Growing in Queensland" issued by the Department.

Maize Production in Queensland.

MAIZE was the world's most extensively-grown cereal, said Mr. C. J. McKeon, Instructor in Agriculture, in a recent radio lecture. The average yield an acre in Australia compared very favourably with that of the other chief maize-producing countries. Taken over a five-year period, 1926-1930, that was slightly more than 26 bushels compared with 27 bushels in America, and an average yield for the world by approximately 23 bushels.

Maize was Queensland's chief cereal, more than 50 per cent. of the total crop for the Commonwealth being produced in this State. The crop was worth about £1,000,000 a year to the State, that for the 1924-1925 season being worth nearly one and a-half millions. As maize in Queensland was usually grown in comparatively small areas, the resultant high cost of production was the principal factor against depending upon an export trade, while the distance from overseas markets was also a big handicap. Before attempting to build up an export trade, Australian markets could be greatly developed. Much could be done further to popularise maize as a stock food, while its value as a human food was being appreciated more each year.

The value of maize meal as a food for dairy cattle in the colder months of the year, when natural supplies of food were either scarce or possessed little food value, was not by any means fully appreciated by dairymen. Maize had long been a popular pig food, and its value for that purpose was fully demonstrated in the feeding trials conducted recently at Yeerongpilly, to demonstrate the comparative feeding values of maize, wheat, and barley, when used in balanced rations. The maize-fed pigs grew faster and required less food by weight to produce a given quantity of pork than those fed on wheat and barley.

Tremendous areas in Queensland were suitable for maize growing, and if conditions warranted it considerable expansion could take place. Growers as a whole would certainly benefit by some form of organised marketing, as they would then be able to enter into contracts which would not be possible under present conditions.

THE QUEENSLAND SUGAR INDUSTRY.

By H. T. EASTERBY, Director of Sugar Experiment Stations.

PART XXVI.

FIELD MACHINERY.

THE earliest ploughs used for cane work in cultivable land after the cane had been grown amongst stumps for some years and the ground had been cleared were mostly of the imported type with a land wheel as well as a furrow wheel, and having a long narrow mouldboard. This was known as the "wheel plough." This plough was a great favourite. Types of single-furrow swing ploughs with a deeper, shorter mouldboard were also made, and one was known as a turn wrest plough, the mouldboard of which could be shifted from one side to the other. Double-furrow ploughs were also in use. Most of these early ploughs were made by Ransome and Sims, of Great Britain. Fowler ploughs were also used, and subsoil ploughs of the type of the "Rock Island" were sometimes employed. Double mouldboard ploughs for drilling out were early employed.

Alexander McLean, an agricultural implement maker in Adelaide street, Brisbane, advertised his superior prize ploughs as early as 1870, and stated they had won the four principal prizes at "the ploughing match." McLean also sold a plough known as the "Colonial Bullock plough." This implement was made for breaking up new land in which it had to cut through roots, &c., to a depth of 8 to 10 inches. The form adopted was similar to that of the ordinary Scotch swing plough. The breast was higher and ran out to a greater cutting edge than ordinary. The coulter was very heavy and sharp and there was a strong draught bar. Ten bullocks or six horses were used. Four acres per week was considered fair work. Most of the coulters were knife pattern, but disc coulters began to be used. Steam ploughs were also advertised for sugar lands.

Somewhat later the American ploughs came into favour, and many American and Canadian manufacturers opened agencies. The American single-furrow swing plough became a strong favourite, and what was known as the "Solid Comfort Sulky Plough," the mouldboard and share being placed between two wheels with a seat for the ploughman, came into fashion. A swing plough that has been greatly used in the sugar districts was that of Mr. N. P. Willman, made at Mackay. This commanded a great sale and was of much value in preparing land for cane.

Disc ploughs, now the most popular of all, were introduced in the 'nineties; the size of the disc varied from 24 to 30 inches, and were at first, for the most part, single discs. They were also mounted on two or more wheels with a seat for the ploughman. The Canton Disc was an early favourite, and the Colonial Sugar Refining Company used a two-wheeled disc plough with a subsoiler attached, known as the "Secretary." Numerous makes of disc ploughs came into general use, nearly all at first being Canadian or American in manufacture. Later, good types of disc ploughs were made in Australia. The desire to save labour owing to its increased cost commenced to operate, and in 1910 tractors began to be used for ploughing. These at first dragged a single or double disc, but later gang ploughs of multiple discs came into use and also what were known as "one man outfits." Tractor ploughing has

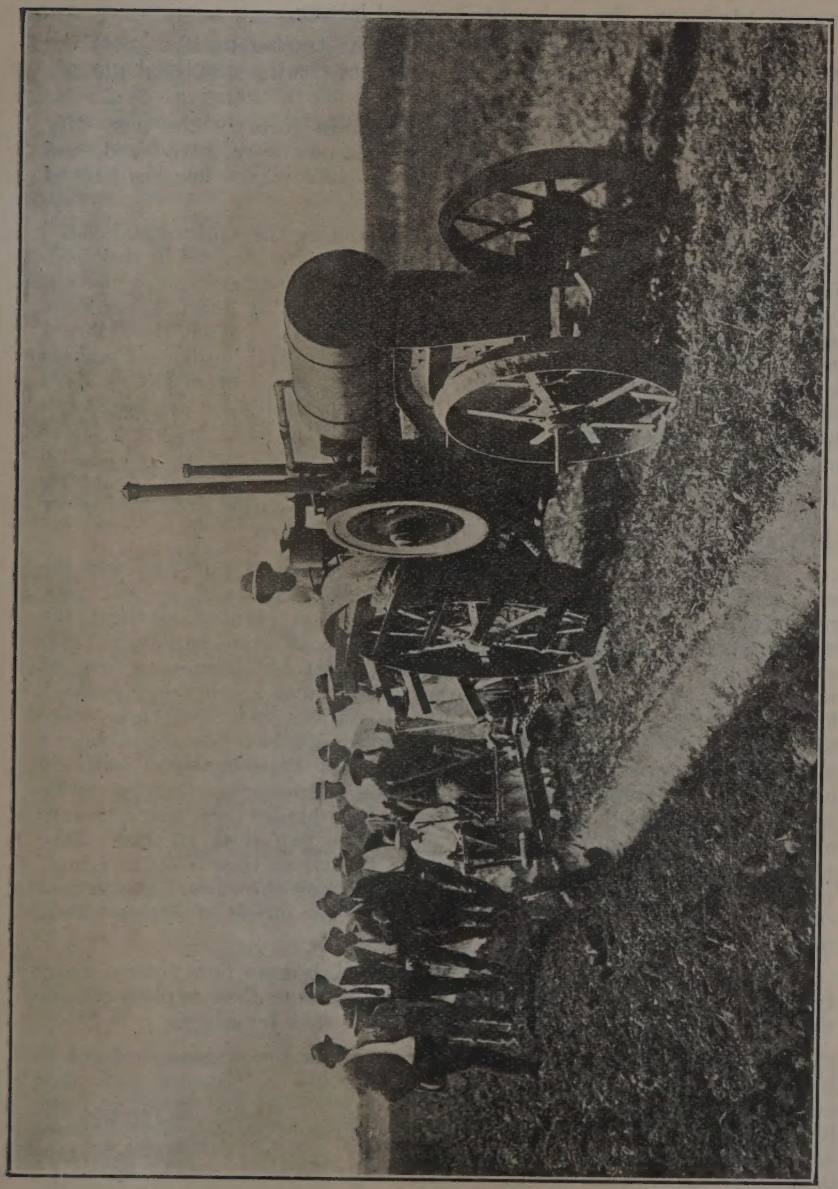

PLATE 48.—THE TRACTOR AND PLOUGH AT WORK.

increased materially in recent years. Since tractors have been put on the market at reasonable rates the greater part of the preparation of land for cane is now done with the aid of the tractor. This has meant a great advance in the saving of time and labour.

Discs have been latterly attached to the tractor itself so that the whole implement is self-contained. This has greatly simplified ploughing operations.

Tyne harrows have not changed much in form in the past fifty years. About thirty-five years ago disc harrows were introduced, and these have been greatly developed; also an auto rotary hoe has proved very efficient.

Driven by the stern force of circumstances the Queensland cane-grower has been obliged to seek many labour-saving devices in the field. In the days when costs of cultivation were low and prices comparatively high the old-fashioned planter did all his planting by hand. This went on right through the Kanaka times, but shortly after the altered conditions made white labour imperative, growers and implement makers began to set their brains to work and several types of machines were evolved, and from crude beginnings efficient machines for planting cane were put on the market. To-day there is little hand planting, it is nearly all done with the machine. Some of these cut the cane into sets during operations and others have attachments for dropping fertilizer with the plants. Some make their own drills, drop and cover the plants, and others require a drill opened out first.

After the cane sets have been planted the next question was the inter-row tillage of the cane. In the early days (and up till very recently in new scrub land where the cane is planted amongst the stumps left after clearing) the hoe was the only effective implement used except where the stumps were light in character and then some form of stump jump cultivator was used. For cane plants in ploughed ground, however, there are many types of cultivators. At first these were somewhat heavy in build, fitted with grubbing tynes, but now-a-days a much lighter implement of the Planet Junior type has been built by using a steel tubular construction for the framework. Digging tynes are still used as well as sweeps and butterfly blades. In order to save more time, double cultivators are used to do two rows at once. Disc cultivators are also used, especially one known as the "Cotton King" which does two interspaces at once by straddling the rows. Motor cane cultivators are now-a-days used, all with the one object of saving labour costs.

Manures were originally spread by hand, but we now possess many types of fertilizer distributors, from the machine that applies on one side of the row only at a time, to the two-row cane fertilizer.

At first all chipping and cleaning of the cane was done by hand as previously mentioned, but later on machine cultivators and disc cultivators were used in between the rows. Well and good, but the drill itself required weeding and was a source of considerable expense in hand chipping. How was this to be got over? The inventive Australian got to work and some of these patented attachments to fasten behind the disc cultivators. These were tough spring steel teeth with a suitable curve which went up and down in the drill and cleaned it of weeds. Thousands of these implements were sold throughout the sugar districts of Queensland, and the troublesome drill weeding was to a large extent done away with.

Other drill cleaners and weeders consist of a revolving wheel fitted with teeth, and these are also favoured for the work by many farmers.

Cane cutting is still done by hand, but many ingenious brains have been working on this problem which will be dealt with in a later section.

After the plant crop is cut the cane is usually ratooned, which means a new growth of cane from the old stools. Many implements have been invented to aid in cheapening this work. Many years ago what were termed "stubble shavers" and "stubble diggers" were introduced from America. The former went over the stools and cut any part of the cane left projecting above the ground surface level. The digger loosened the earth around the stools. Neither of these implements came into favour. Ploughs for ratooning are many and varied. An auto rotary cultivator, tractor drawn, is favoured by many farmers, others "disc harrow" or "tyne harrow" ratoons. Much of this work is now done by tractors. Other implements used in ratooning are the grubber, the ratoon plough, the spring tooth cultivator, &c. After the final crop of ratoons some growers believe in ploughing in trash, and machines for cutting trash in small pieces before it is buried have been put on the market. It may be explained that "trash" is the dead leaves and tops of the cane, and there is generally a big body of this material to be got rid of. This in most cases is done by burning same before ratooning is commenced, but ploughs either specially made or which have been adapted for the turning in of the trash are utilised for burying of trash where this is carried out.

It can safely be asserted that the Queensland sugar industry leads the world in the utilisation of agricultural machinery, and this has been very generally admitted by overseas visitors, many of whom have come specially to Queensland to gain ideas and purchase implements. The manager of one of the Hawaiian plantations recently stated that what struck him most in Queensland was—

1. The general practice of machine planting;
2. The development of new and original implements for inter-row cultivation;
3. The use of machines for weeding in the cane rows; and
4. The interest and earnest endeavours that are being made to develop harvesting machines.

The last paragraph (No. 4) brings us naturally to the subject of cane harvesters, which will be dealt with in the next article.

[TO BE CONTINUED IN THE JULY ISSUE.]

If you like this issue of the Journal, kindly bring it under the notice of a neighbour who is not already a subscriber. To the man on the land it is free. All that he is asked to do is to complete the Order Form on another page and send it to the Under Secretary, Department of Agriculture and Stock, together with a shilling postal note, or its value in postage stamps, to cover postage for twelve months.

FARM FERTILITY TRIALS.

RESULTS FOR THE 1931 SEASON.

By H. W. KERR.

(*Continued from the April issue*)

SOUTHERN DISTRICTS.

The season in the southern areas was what might be called a fair average one. Hence the returns from many of the plots harvested are distinctly disappointing. The failure of the crop to respond to fertilizer when the average yield of a block was decidedly below what might reasonably be expected, and indeed was shown by adjacent areas of similar type, is a definite indication of a moisture deficiency; and in many cases it would probably be found on examination that inadequate tillage was the chief trouble. This indeed was the case with several which were carefully inspected. The ratoon crops in most cases showed crop increases from the use of fertilizer very much in excess of what the plant crops revealed.

Location.—**W. J. Tutin's farm, Gooburrum.**

Soil Type.—Forest loam.

Variety.—Q. 813. Age of crop—Nineteen months. Nature of crop—Plant cane.

RESULTS.

	No Fertilizer.	240 lb. Sulphate of Ammonia + 240 lb. Super-phosphate.	240 lb. Sulphate of Ammonia + 180 lb. Potash.	240 lb. Super-phosphate + 180 lb. Potash.	240 lb. Sulphate of Ammonia + 240 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	13·4	14·1	15·0	14·4	15·4
C.C.S. in cane	16·2%	15·4%	15·3%	15·1%	15·0%
Value of crop	£26 7 0	£25 19 0	£27 9 0	£25 16 0	£27 7 0
Less harvesting costs	£5 4 0	£5 6 0	£0 9 0	£5 8 0	£5 12 0
Return	£21 3 0	£20 13 0 Decrease.	£22 0 0	£20 8 0 Decrease.	£21 15 0
Increased or decreased return due to fertilizer	..	£0 10 0	£0 17 0	£0 15 0	£0 12 0
Cost of fertilizer and application	..	£2 10 0	£3 3 0	£2 9 0	£3 16 0
Loss from fertilizer	..	£3 0 0	£2 6 0	£3 4 0	£3 4 0

The increases on this block were very slight. In all cases the added tonnage did not cover the cost of the fertilizer. This is a plot on which there appears to have been a decidedly adverse influence of the treatment on the c.c.s. of the cane.

Location.—**J. Black's farm, Gooburrum.**

Soil Type.—Red forest soil, typical of the area.

Variety.—Q. 813. Age of crop—Fourteen months. Nature of crop—Plant cane.

RESULTS.

	No Fertilizer.	270 lb. Sulphate of Ammonia + 300 lb. Superphosphate.	270 lb. Sulphate of Ammonia + 120 lb. Potash.	300 lb. Superphosphate + 120 lb. Potash.	270 lb. Sulphate of Ammonia + 300 lb. Superphosphate + 120 lb. Potash.
Tons cane per acre	15·2	16·1	17·6	16·0	16·4
C.C.S. in cane	16·8%	16·7%	16·4%	16·7%	16·8%
Value of crop	£31 4 0	£32 17 0	£35 3 0	£32 13 0	£33 14 0
Less harvesting costs	£5 10 0	£5 17 0	£6 8 0	£5 16 0	£5 19 0
Return	£25 14 0	27 0 0	£25 15 0	£26 17 0	£27 15 0
Increased return due to fertilizer	..	£1 6 0	£0 1 0	£1 3 0	£2 1 0
Cost of fertilizer and application	..	£2 17 0	£2 17 0	£2 2 0	£3 13 0
Loss from fertilizer	..	£1 11 0	£2 16 0	£0 19 0	£1 12 0

Location.—**P. Peterson's farm, South Kolan.**

Soil Type.—This block is on the slope below a volcanic ridge, and is mixed volcanic-sandy loam.

Variety.—Black Innis. Age of crop—Twelve months. Nature of crop—First ratoon.

RESULTS.

	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate.	250 lb. Sulphate of Ammonia + 400 lb. Potash.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate + 400 lb. Potash.
Tons cane per acre	14·7	17·4	18·8	23·5	23·2
C.C.S. in cane	14·1%	14·0%	13·9%	14·2%	14·3%
Value of crop	£23 19 0	£28 1 0	£30 0 0	£38 14 0	£38 10 0
Less harvesting costs	£5 10 0	£6 6 0	£6 16 0	£8 10 0	£8 8 0
Return	£18 9 0	£21 15 0	£23 4 0	£30 4 0	£30 2 0
Increased return due to fertilizer	..	£3 6 0	£4 15 0	£11 15 0	£11 13 0
Cost of fertilizer an d application	..	£1 18 0	£2 12 0	£4 4 0	£4 18 0
Profit from fertilizer	..	£1 8 0	£2 3 0	£7 11 0	£10 15 0

The results from the use of potash are again very definite on this soil. With the ratoons, however, the use of a nitrogenous manure was also of importance, although its influence on the plant was very slight. Superphosphate was again without much influence, indicating that this soil type is predominantly volcanic.

Location.—**Eardley Brothers' farm, North Coast road, via Bundaberg.**

Soil Type.—Forest sandy loam; an important soil type of the area.

Variety.—Q. 813. Age of crop—Eleven months. Nature of crop—First ratoon.

RESULTS.

	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 250 lb. Super-phosphate.	250 lb. Sulphate of Ammonia + 300 lb. Potash.	250 lb. Sulphate of Ammonia + 250 lb. Super-phosphate + 300 lb. Potash.
Tons cane per acre	12·8	13·4	18·8	16·2	22·2
C.C.S. in cane	13·9%	14·0%	14·0%	14·1%	14·0%
Value of crop	£20 9 0	£21 12 0	£30 6 0	£26 8 0	£35 16 0
Less harvesting costs	£5 6 0	£5 4 0	£6 16 0	£5 17 0	£8 1 0
Return	£15 3 0	£16 8 0	£23 10 0	£20 11 0	£27 15 0
Increased return due to fertilizer	..	£1 5 0	£8 7 0	£5 8 0	£12 12 0
Cost of fertilizer and application	..	£1 18 0	£2 12 0	£4 1 0	£4 15 0
Profit or loss from fertilizer ..	..	Loss. £0 13 0	Profit. £5 15 0	Profit. £1 7 0	Profit. £7 17 0

Although there was a definite falling off in the yield from the unfertilized plots from plant to first ratoons, the return from the complete fertilizer plots was but slightly reduced. For the plant crop the yield was 23·4 tons, as against 22·2 tons here recorded. A high response to superphosphate was the outstanding result.

Location.—**A. F. Shaw's farm, Bucca.**

Soil Type.—Ridge soil, typical of the area.

Variety.—Co. 210. Age of crop—Fourteen months. Nature of crop—Plant cane.

RESULTS.

	No Fertilizer.	225 lb. Sulphate of Ammonia + 270 lb. Super-phosphate.	225 lb. Sulphate of Ammonia + 120 lb. Potash.	[270 lb. Super-phosphate + 120 lb. Potash.	225 lb. Sulphate of Ammonia + 270 lb. Super-phosphate + 120 lb. Potash.
Tons cane per acre	7·7	9·6	9·3	8·9	10·4
C.C.S. in cane	13·5%	10·6%	12·3%	13·9%	12·0%
Value of crop	£11 17 0	£10 8 0	£12 10 0	£14 4 0	£13 10 0
Less harvesting costs	£4 4 0	£4 15 0	£4 12 0	£4 12 0	£4 13 0
Return	£7 13 0	£5 13 0 Decrease.	£9 18 0	£9 12 0	£8 17 0
Increased or decreased return due to fertilizer	..	£2 0 0	£2 5 0	£1 19 0	£1 4 0
Cost of fertilizer and application	..	£2 11 0	£2 13 0	£2 2 0	£3 8 0
Loss from fertilizer	..	£4 11 0	£0 8 0	£0 3 0	£2 4 0

Location.—**C. N. Dahl's farm, Woongarra, Bundaberg.**

Soil Type.—Red volcanic loam.

Variety.—D. 1135. Age of crop—Twelve months. Nature of crop—First ratoon.

RESULTS.

	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 250 lb. Super-phosphate.	250 lb. Sulphate of Ammonia + 400 lb. Potash.	250 lb. Sulphate of Ammonia + 250 lb. Super-phosphate + 400 lb. Potash.
Tons cane per acre	13·5	15·3	16·5	18·7	18·6
C.C.S. in cane	13·3%	12·5%	12·9%	12·3%	12·7%
Value of crop	£20 7 0	£21 2 0	£23 16 0	£25 5 0	£26 4 0
Less harvesting costs	£5 5 0	£5 11 0	£6 0 0	£6 16 0	£6 15 0
Return	£15 2 0	£15 11 0	£17 16 0	£18 9 0	£19 9 0
Increased return due to fertilizer	..	£0 9 0	£2 14 0	£3 7 0	£4 7 0
Cost of fertilizer and application	..	£1 18 0	£2 12 0	£4 4 0	£4 18 0
Profit or loss from fertilizer ..	..	Loss. £1 9 0	Profit. £0 2 0	Loss. £0 17 0	Loss. £0 11 0

The plant crop showed practically no results from fertilizing. With the ratoons, however, the need for potash is evident; this is what we would expect from the true volcanic soils of this area, and the definite increase from sulphate of ammonia is also of interest.

Location.—**Burrage Brothers' farm, Maroondan.**

Soil Type.—Black clay, typical of the area.

Variety.—M. 1900. Age of crop—Twelve months. Nature of crop—First ratoon.

RESULTS.

	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 300 lb. Super-phosphate.	250 lb. Sulphate of Ammonia + 240 lb. Potash.	250 lb. Sulphate of Ammonia + 300 lb. Super-phosphate + 240 lb. Potash.
Tons cane per acre	4·9	4·0	4·7	6·0	7·3

Although the results indicate some response to fertilizer treatment, the crop was practically a failure. The profound difficulties associated with the cultivation of these heavy clay soils, except under favourable conditions, will be appreciated.

Location.—**H. Kay's farm, Gin Gin.**

Soil Type.—Red volcanic loam.

Variety.—M. 1900 Seedling. Age of crop—Thirteen months. Nature of crop—Plant cane.

RESULTS.

	No Fertilizer.	240 lb. Sulphate of Ammonia + 240 lb. Superphosphate.	240 lb. Sulphate of Ammonia + 180 lb. Potash.	240 lb. Superphosphate + 180 lb. Potash.	240 lb. Sulphate of Ammonia + 240 lb. Superphosphate + 180 lb. Potash.
Tons cane per acre	8·5	10·8	9 5	10·7	11·1
C.C.S. in cane	16·5%	16·6%	16 6%	16·6%	16·6%
Value of crop	£16 14 0	£21 7 0	£18 16 0	£21 4 0	£21 19 0
Less harvesting costs	£4 8 0	£4 16 0	£4 13 0	£4 15 0	£4 17 0
Return	£12 6 0	£16 11 0	£14 3 0	£16 9 0	£17 2 0
Increased return due to fertilizer	..	£4 5 0	£1 17 0	£4 3 0	£4 16 0
Cost of fertilizer and application	..	£2 10 0	£3 4 0	£2 10 0	£3 17 0
Profit or loss from fertilizer ..	..	Profit. £1 15 0	Loss. £1 7 0	Profit. £1 13 0	Profit. £0 19 0

It was unfortunate that the incidence of grubs played havoc with this trial quite early in its life. The results are as a consequence most erratic.

Location.—**G. H. Wadsworth's farm, Wallaville.**

Soil Type.—Alluvial loam.

Variety.—Mahona. Age of crop—Thirteen months. Nature of crop—Plant cane.

RESULTS.

	No Fertilizer.	240 lb. Sulphate of Ammonia + 304 lb. Superphosphate.	240 lb. Sulphate of Ammonia + 128 lb. Potash.	304 lb. Superphosphate + 128 lb. Potash.	240 lb. Sulphate of Ammonia + 304 lb. Superphosphate + 128 lb. Potash.
Tons cane per acre	26·7	28·4	28·7	29·3	27·7
C.C.S. in cane	9·5%	9·4%	9·7%	9·5%	9·6%
Value of crop	£24 5 0	£25 6 0	£27 0 0	£26 12 0	£25 12 0
Less harvesting costs	£9 14 0	£10 6 0	£10 8 0	£10 12 0	£10 1 0
Return	£14 11 0	£15 0 0	£16 12 0	£16 0 0	£15 11 0
Increased return due to fertilizer	..	£0 9 0	£2 1 0	£1 9 0	£1 0 0
Cost of fertilizer and application	..	£2 11 0	£2 12 0	£2 8 0	£3 8 0
Loss from fertilizer	..	£2 2 0	£0 11 0	[£0 14 0	£2 8 0

Location.—**M. Oakes's farm, Childers.**

Soil Type.—Red volcanic loam (hillside).

Variety.—Q. 813. Age of crop—Fourteen months. Nature of crop—Plant.

RESULTS.

	No Fertilizer.	225 lb. Sulphate of Ammonia + 225 lb. Super-phosphate.	225 lb. Sulphate of Ammonia + 180 lb. Potash.	225 lb. Super-phosphate + 180 lb. Potash.	225 lb. Sulphate of Ammonia + 225 lb. Super-phosphate + 180 lb. Potash.
Tons cane per acre	15·6	14·3	13·9	16·4	14·9

Location.—**A. Adie's farm, Cordalba.**

Soil Type.—Red volcanic loam.

Variety.—D. 1135. Age of crop—Fourteen months. Nature of crop—First ratoon.

RESULTS.

	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 250 lb. Super-phosphate.	250 lb. Sulphate of Ammonia + 400 lb. Potash.	250 lb. Sulphate of Ammonia + 250 lb. Super-phosphate +400 lb. Potash.
Tons cane per acre	14·0	16·2	17·4	17·6	21·0
C.C.S. in cane	16·5%	15·2%	15·0%	15·4%	15·5%
Value of crop	£28 4 0	£29 6 0	£30 18 0	£32 7 0	£38 19 0
Less harvesting costs	£5 5 0	£5 17 0	£6 6 0	£6 8 0	£7 12 0
Return	£22 19 0	£23 9 0	£24 12 0	£25 19 0	£31 7 0
Increased return due to fertilizer	..	£0 10 0	£1 13 0	£3 0 0	£8 8 0
Cost of fertilizer and application	..	£1 18 0	£2 12 0	£4 4 0	£4 18 0
Profit or loss from fertilizer ..	..	Loss. £1 8 0	Loss. £0 19 0	Loss. £1 4 0	Profit. £3 10 0

The returns for the plant crop were erratic, but the ratoons indicate a definite response to sulphate of ammonia, with secondary increases from superphosphate and potash. Again we find a pronounced depression of the c.c.s. content of the fertilized cane, and for this reason only the completely manured cane showed a profitable return. The trial as a whole was rather marred by the fact that the canes of the H.Q. 285 stools which were used as supplies for the plant crop were almost completely eaten out by foxes.

Location.—**Irwin Brothers' farm, Cordalba.**

Soil Type.—Red volcanic loam.

Variety.—M. 1900 Seedling. Age of crop—Fifteen months. Nature of crop—Plant cane.

RESULTS.

	No Fertilizer.	208 lb. Sulphate of Ammonia + 208 lb. Superphosphate.	208 lb. Sulphate of Ammonia + 192 lb. Potash.	208 lb. Superphosphate + 192 lb. Potash.	208 lb. Sulphate of Ammonia + 208 lb. Superphosphate + 192 lb. Potash.
Tons cane per acre	15·7	16·9	16·9	17·4	18·6
C.C.S. in cane	16·8%	17·0%	16·7%	17·0%	16·7%
Value of crop	£32 5 0	£35 6 0	£34 9 0	£36 6 0	£37 18 0
Less harvesting costs	£5 14 0	£6 3 0	£6 3 0	£6 6 0	£6 15 0
Return	£26 11 0	£29 3 0	£28 6 0	£30 0 0	£31 3 0
Increased return due to fertilizer	..	£2 12 0	£1 15 0	£3 9 0	£4 12 0
Cost of fertilizer and application	..	£2 4 0	£3 2 0	£2 10 0	£3 13 0
Profit or loss from fertilizer ..	..	Profit. £0 8 0	Loss. £1 7 0	Profit. £0 19 0	Profit. £0 19 0

Location.—**C. H. Tench's farm, Nikenbah.**

Soil Type.—Forest loam, typical of soil of the area.

Variety.—N.G. 40. Age of crop—Twenty-four months. Nature of crop—Standover plant.

RESULTS.

	No Fertilizer.	60 lb. Sulphate of Ammonia.	60 lb. Sulphate of Ammonia + 240 lb. Superphosphate.	60 lb. Sulphate of Ammonia + 240 lb. Potash.	60 lb. Sulphate of Ammonia + 240 lb. Superphosphate + 240 lb. Potash.
Tons cane per acre	23·5	24·6	27·3	28·1	30·3
C.C.S. in cane	..	..	..	..	..
Value of crop	£37 18 0	£39 13 0	£44 0 0	£45 6 0	£48 17 0
Less harvesting costs	£8 10 0	£8 18 0	£9 18 0	£10 4 0	£11 0 0
Return	£29 8 0	£30 15 0	£34 2 0	£35 2 0	£37 17 0
Increased return due to fertilizer	..	£1 7 0	£4 14 0	£5 14 0	£8 9 0
Cost of fertilizer and application	..	£0 17 0	£1 10 0	£2 12 0	£3 5 0
Profit from fertilizer	..	£0 10 0	£3 4 0	£3 2 0	£5 4 0

Due to a misunderstanding, this trial did not receive a top dressing of sulphate of ammonia. Our treatments are therefore practically a comparison between potash and superphosphate, and each has exerted its influence on the yields. The plots receiving the "complete" mixture showed the superior yield. In all probability, a well-balanced mixture would be best suited to this type of soil, especially for ratoons.

Location.—**T. Beattie's farm, Mount Bauple.**

Soil Type.—Stony hillside soil, typical of the upland soils of the area.

Variety.—D. 1135. Age of crop—Twelve months. Nature of crop—First ratoon.

RESULTS.

——	No Fertilizer.	250 lb. Sulphate of Ammonia.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate.	250 lb. Sulphate of Ammonia + 300 lb. Potash.	250 lb. Sulphate of Ammonia + 250 lb. Superphosphate + 300 lb. Potash.
Tons cane per acre	7·6	11·8	11·7	15·1	13·1
C.C.S. in cane	14·6%	14·7%	14·5%	14·8%	14·9%
Value of crop	£13 0 0	£20 7 0	£19 17 0	£26 6 0	£23 1 0
Less harvesting costs	£4 2 0	£5 3 0	£5 2 0	£5 9 0	£5 2 0
Return	£8 18 0	£15 4 0	£14 15 0	£20 17 0	£17 19 0
Increased return due to fertilizer	..	£6 6 0	£5 17 0	£11 19 0	£9 1 0
Cost of fertilizer and application	..	£1 18 0	£2 12 0	£4 1 0	£4 15 0
Profit from fertilizer	..	£4 8 0	£3 5 0	£7 18 0	£4 6 0

This is still another area on which a crop failure has been turned into a fair ratoon crop by the use of artificial manures. The results for the ratoon crop are irregular, but there appears to have been certainly a definite increase from sulphate of ammonia.

Location.—**J. W. Tatnell's farm, Maroochy River.**

Soil Type.—Alluvial loam; better class soil of the district.

Variety.—Q. 813. Age of crop—Twelve months. Nature of crop—Plant cane.

RESULTS.

——	No Fertilizer.	240 lb. Sulphate of Ammonia + 320 lb. Superphosphate.	240 lb. Sulphate of Ammonia + 128 lb. Potash.	320 lb. Superphosphate + 128 lb. Potash.	240 lb. Sulphate of Ammonia + 320 lb. Superphosphate + 128 lb. Potash.
Tons cane per acre	22·7	25·2	23·8	25·4	26·4
C.C.S. in cane	15·2 %	15·0%	15·2%	14·8%	14·8%
Value of crop	£41 1 0	£44 15 0	£43 1 0	£44 5 0	£46 0 0
Less harvesting costs	£8 5 0	£9 3 0	£8 13 0	£9 4 0	£9 11 0
Return	£32 16 0	£35 12 0	£34 8 0	£35 1 0	£36 9 0
Increased return due to fertilizer	..	£2 16 0	£1 12 0	£2 5 0	£3 13 0
Cost of fertilizer and application	..	£2 15 0	£2 14 0	£2 5 0	£3 12 0
Profit or loss from fertilizer ..	..	Profit. £0 1 0	Loss. £1 2 0	..	Profit. £0 1 0

The results from this trial indicate a response only to superphosphate. Small but indefinite increases from the use of potash and ammonia are suggestive, but it will be necessary to wait for the results from the ratoon crop for definite confirmation.

DISEASES OF THE PIG.

E. J. SHELTON, H.D.A., Senior Instructor in Pig Raising.

HAIRLESSNESS, LACK OF VITALITY, GOITRE.

INSTANCES have come under notice in recent years of farmers suffering severe losses of pigs from absolute lack of vitality in certain of the litters. In some of these litters the affected suckers were the progeny of sows with otherwise normal litters, kept under exactly the same conditions. In other instances they appeared to be only the progeny of certain sows that exhibited these indications of bodily weakness. In some cases the suckers develop well for the first three, four, or even six or seven weeks, then they begin to sicken, dropping off one by one until most, if not all, had died. In many of these cases there did not appear to be any specific disease present, though in one or two instances it was evident that the sow had suffered from inflammation of the udder, and had not regained her normal milk supply; but in most instances both the sow and her progeny appeared normal up to the stage referred to.

Viewing the position as not altogether uncommon and as one likely to occur at any time, it would appear that these are cases in which the lack of vitality indicates a serious lack of readily available nutriment in the food, also a lack of vitamins—those strength-giving units in food about which we have heard so much and know so little. In countries overseas it is generally thought that hairlessness in newly-born pigs is associated with the development of goitre, a peculiar disease about which, also, pig raisers know too little. Dr. John M. Evvard, one of the most prominent authorities on pig raising in the United States of America, several years ago devoted a great deal of time to a study of these troubles, and in correspondence discussed with me the cause and treatment in this way:—

"Iodine such as is contained in potassium iodide, calcium and sodium iodide, recommended as additions to mineral mixtures for pigs is of immense importance in promoting the right kind of uter or prenatal development in this class of stock. If there is not enough iodine in the ration, then the absence of this material will show itself in the resulting pig crop. In this connection we are wondering if you have ever noticed any hairless pigs in the course of your work or travels. Hairlessness in new-born pigs is, in a great many cases, due to an insufficient amount of iodine in the sow's rations. Potassium iodide carries approximately 76·45 per cent. of iodine, and sodium iodide carries in round numbers, 84·66 per cent. of iodine.

"Inasmuch as pigs may be handicapped because of a deficient supply of iodine and yet show no gross or unusual signs of goitre or other iodine deficiency troubles, it appears to us that it is good practice, in goitrous regions particularly, to use iodide in the feeding ration. The iodine fed in the form of iodide may be put in the drinking water or be mixed with the food. In the latter case, we believe it is sound practice to use from one-third to one ounce of either sodium or potassium iodide in each 100 lb. of mineral mixture, the mixture to be kept before the pigs at all times. American experiments have indicated

that one could add one-tenth pound (1·6 ounces) of potassium iodide to 100 lb. of mineral mixture without causing any noticeable untoward effects. We have added three-tenths of one pound (4.8 ounces) to 100 lb. of mineral mixture without noting any unfavourable developments, but would much prefer the small allowances of from one-third to one ounce."

In three different experiments carried out at Ames, Iowa, U.S.A., wherein the only difference between the rations compared was a small amount of potassium iodide fed, an average of 10 per cent. greater gains was secured with a 10 per cent. lesser feed requirements where the iodine was added to the ration of young growing and fattening pigs. There is less chance for iodine deficiency if the breeding sows are kept out on succulent pasture in the spring and summer time.

It is of interest to note that in certain experiments lack of iodine in the ration caused the pigs to be carried over time, hence the sows in these experiments were late in farrowing. The question of exercise is one of importance also with sows having difficulty at farrowing time, especially in cases where the birth of the pigs is unduly delayed, inasmuch as pampered sows (those which are not permitted to exercise freely) are more likely to be slow in giving birth to their young than those pregnant sows which are allowed to have wider range and an abundance of succulent green food.

Common salt being one of the most important mineral substances regularly needed for live stock, suggests itself as a splendid carrier for iodine, and provides a way for the practical administration of iodine in sufficient and adequate amounts. The extra gain from iodide feeding in the three Ames experiments were respectively 8·4, 8·3, and 13·1 per cent. Over the three experiments there was a greater average daily gain of 9·91 per cent. (based on a straight average) due to the iodide feeding. The food required for 100 lb. of gain was also reduced by iodide feeding in the three experiments respectively, as follows:—12·5, 9·4, and 8·0 per cent.—i.e., on the average 10·0 per cent. less feed was required with iodide feeding.

Pig breeders should note that, to have healthy young pigs, and healthy breeding stock, it is highly essential that the intake or consumption of iodine be sufficient. It is good insurance against thyroid troubles and the development of goitre and allied ailments.

We might add that it is apparent the soil and water in certain districts in this country are distinctly deficient in their content of iodine, hence the provision of mineral mixtures, green pastures, green foods, and balanced rations all tend to the elimination of disease and to the production of strong, healthy, vigorous stock.

What Dr. Evvard has demonstrated in the United States is certainly worth adoption here; those farmers who have been using these methods report excellent results.

The old adage that "prevention is better than cure" finds special application in discussing diseases having as their origin a deficiency in one or other of the essential elements in the building up of human and animal bodies.

A NEW SPECIES OF PELORIDIIDAE (HEMIPTERA) FROM QUEENSLAND.

By H. HACKER, F.E.S., Entomologist, Department of Agriculture and Stock, Queensland.

THIS species, which is the first to be recorded from the mainland of Australia, was found in the McPherson Range, near the southern boundary of Queensland. The locality is 4,000 feet above sea-level and consists of dense rain forests, notable for the presence of many venerable specimens of the Antartic Beech tree *Fagus moorei* F.v.M. Three females were taken in the beating net, either from the beech trees or others in the immediate vicinity. This indicates that the Queensland species, at least during the summer months is arboreal in its habits.

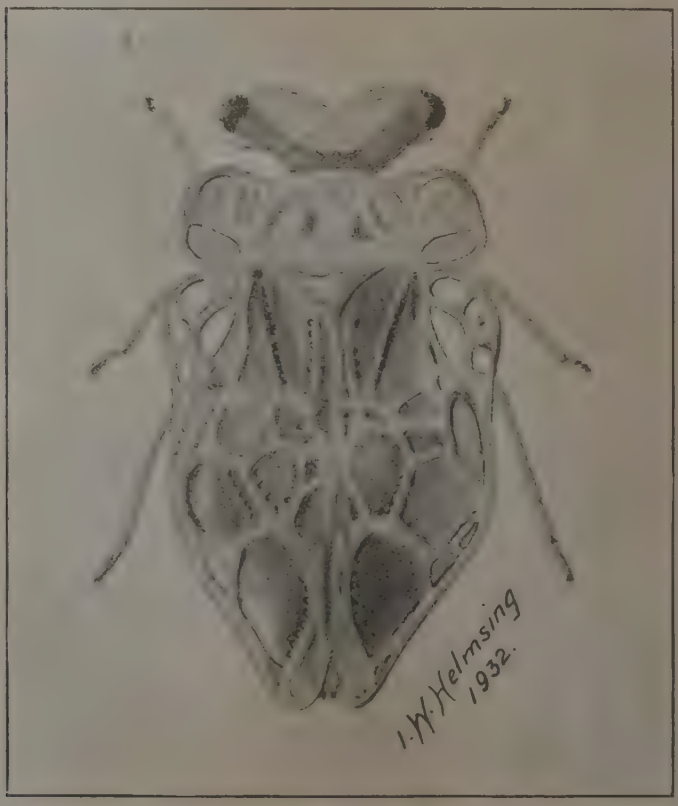

PLATE 49.

Hemiodoecus veitchi* n. sp.

♀. Sub-brachypterous form. Shining, ochraceous with a brownish suffusion at base of tegmina which sometimes extends anteriorly to the middle rib of the paranota and posteriorly along the ribs of the claval tegminal areolæ. Head widely separated from the pronotum, to which it is attached for about one-third of its diameter, the thickened basal portion directed obliquely forward, the eyes placed at the extremities; anterior margin bi-arcuate, deeply centrally excised; the two enclosed areolæ obliquely placed, about twice as long as wide and distinctly narrowed outwardly. Paranota well developed, subquadrate, the anterior and posterior angles broadly rounded; margins, and the boundaries of areolæ strongly ribbed. The tegmina are basally strongly convexly curved to their greatest width, somewhat constricted one-fourth from base, slightly overlapping near the apices, which are acutely rounded; the areolæ are strongly ribbed, asymmetrical; close to the margin of each discal areolet is a row of minute impressed punctures. Length 3 mm. Greatest width across tegmina 1·75 mm.

Holotype.—National Park, McPherson Range, 16th March. (*H. Hacker.*) Deposited in the Queensland Museum. Reg. No. 5162.

Paratypes.—In the British Museum and in the Entomological Branch, Department of Agriculture and Stock, Brisbane.

This species agrees with *H. leai* China in possessing very short marginal bristles which are visible under a fairly high magnification: the number and position of the larger areolæ are approximately the same. It differs from that species, however, in the shape of the head and the wider space separating it from the paranota; the more strongly sinuate tegminal costal margins and a row of minute marginal punctures around all the tegminal discal areolæ, not merely the basal ones.

Thanks are due to Mr. I. W. Helmsing, the Departmental artist, for the illustration of the holotype.

* Dedicated to Mr. Robert Veitch, Chief Entomologist, Department of Agriculture and Stock, Queensland, who made possible the expedition in which it was discovered.

QUEENSLAND SHOW DATES, 1932.

Charleville: 4th and 5th May.
Boonah: 4th and 5th May.
Mitchell: 11th and 12th May.
Mundubbera: 11th and 12th May.
Roma: 16th and 17th May.
Ipswich: 17th to 20th May.
Emerald: 18th and 19th May.
Maryborough: 1st to 3rd June.
Gin Gin: 2nd to 4th June.
Marburg: 2nd and 3rd June.
Wowan: 2nd and 3rd June.
Childers: 7th and 8th June.
Bundaberg: 9th to 11th June.
Rockhampton: 21st to 25th June.
Mackay: 28th to 30th June.
Rosewood: 15th and 16th July.
Royal National: 8th to 13th August.
Crow's Nest: 24th and 25th August.
Wynnum: 26th and 27th August.
Beenleigh: 16th and 17th September.
Rocklea: 24th September.
Nerang: 14th October.
Cleveland: 8th and 9th July.

AIR AND SUN CURING TOBACCO LEAF.

By N. A. R. POLLOCK, H.D.A., Senior Instructor in Agriculture.

THOUGH an almost universal demand is at present made by Australian manufacturers for bright flue-cured tobacco, there is a limited market for leaf that is air or sun cured provided the smoking quality is satisfactory.

At present this class of leaf is almost wholly used in the manufacture of the cheapest brands of tobacco, but if leaf of sufficient quality, more especially of the White Burley variety, is produced, which will allow of satisfactory manufacture or of blending with flue-cured leaf for pipe or cigarette mixtures, it is probable that sales would be more readily made and a more remunerative return secured.

The Department of Agriculture has not recommended the production of air-cured leaf of those varieties most suited for flue curing, but has supplied seed of a variety known as White Burley, which is usually air or sun cured, and for which an increased demand is thought probable if leaf of acceptable quality can be produced.

In anticipation of a more informative article at a future date and to assist those growers of bright varieties who are compelled in the absence of a flue-curing barn to otherwise cure their leaf, as well as to inform those undertaking the production of White Burley, the following brief notes are submitted:—

Air Curing Barns.

In order to secure the best results in air curing tobacco leaf it is important that the barn should be so constructed as to allow as nearly as possible a perfect control of ventilation, through which the curing and drying out of the leaf can be regulated.

Suitable material for curing barns will be found in brick, concrete, pisé, corrugated iron, wood, and thatch. Of these no doubt most consideration will be given to corrugated iron and thatch; the former has a disadvantage in that during dry, hot, and windy weather the leaf is apt to dry out too quickly and present a greenish colour which reduces its value, while in the latter, if the weather is cool and moist, the leaf dries too slowly with a darkening in colour. In North Queensland it has been found that thatched barns—that is, those in which both walls and roof are so covered—have given more satisfactory cures than structures wholly sheeted and roofed with corrugated iron.

A satisfactory sized curing barn is suggested in a structure 20 feet wide by 16 feet high and 32 or more feet long. With tier poles spaced at intervals, horizontally, of 4 feet apart centre to centre and 2 feet 9 inches vertically, the bottom tier being 5 feet from the earthen floor, the capacity of a barn 32 feet long, allowing eight plants to a stick and the sticks 6 inches apart on the tier poles, would be 12,800 plants. With a structure twice the length the capacity would be doubled. Where, however, the plants are large, as in the case of the White Burley variety, it may be advisable to increase the distance between tiers to 3 feet 6 inches; generally, however, a space of 2 feet 9 inches will suffice if the method of harvesting, later described, is followed out.

The plan shown which was suggested for the curing of cigar leaf by the late R. S. Neville, when Instructor in Tobacco Culture for the Queensland Department of Agriculture, illustrates the method of ventilation. This plan with a modification of the distances between tiers as suggested will be found most suitable. It will be noted that provision is made for the tiers to be extended immediately under the roof, which, if thatched, will require a greater pitch and thus provide extra space. The site for an air curing barn should be so well drained that the earthen floor will not become damp in any period of wet weather.

Harvesting.

Tobacco leaf should not be harvested when it is wet with rain or dew, nor should it be touched immediately after a heavy fall of rain; it should be left until the gummy matter is again apparent on the surface of the leaf, which is usually in two or three days.

While picking of single leaves can go on through the day provided they are protected from the direct rays of the sun before transfer to the barn or stringing shelter, it is not advisable to harvest the whole plant when the sun is very hot, as owing to its necessary exposure the leaf is liable to be scorched or so affected that greenish blotches will occur in the leaf however well cured.

On hot bright days the cutting of whole plants should be deferred until about 3 o'clock in the afternoon or later if they can be sufficiently wilted to allow of placing on the sticks before darkness sets in.

When the days are hazy or cloudy without the likelihood of rain cutting can be accomplished as soon as the dew has disappeared.

For air curing a usual practice is to harvest the whole plant in one operation, but better results can be expected when the leaves are picked singly as described under "Bright Tobacco." Under this latter system a better quality can be expected since the leaves would be harvested at a riper stage than would be possible with the former. For indications of ripeness in the harvesting of single leaves reference should be made to the Departmental publication "Tobacco Growing in Queensland" under "Ripening." When the whole plant is to be harvested care should be exercised in seeing that the top leaves are sufficiently matured to permit of a satisfactory cure. This would be suggested when a rough surface is presented accompanied by an extreme brittleness, the web of the leaf breaking readily on being doubled back.

A combination of the two systems will probably be found most advantageous in securing the best quality without unduly prolonging the period of harvest. Thus the lower and middle leaves could be primed as they become ripe, and the upper leaves, later on, harvested with that part of the stem on which they are carried.

Priming.

Under this method the leaves are picked as they ripen and strung on sticks as described in "Tobacco Growing in Queensland" for flue curing. As picking can go on every day, provided the leaf is strung the same day, a better colouring on the plant can be secured than when, as in flue curing, a week or so must elapse before another picking can be made. In this manner over-ripeness in the leaf is avoided.

Cutting the Whole Plant.

The plants in any field will not all ripen at the same time, so in cutting a nice discrimination must be exercised in selecting only those that are sufficiently matured. It is far better to allow a plant to stand a little too long than to harvest it too soon, as green leaf brings the lowest price and is liable to rejection by the manufacturer.

In cutting the plant it is usual to split the stem from the top to within 3 or 4 inches of the lowest leaves, and then, while holding the top of the plant, to bend it slightly over and cut through the stem an inch or so below where the bottom leaf is attached. The plant is now turned over and laid gently on the hill and left until it is sufficiently wilted, usually in half an hour, to allow of handling without danger of breaking the leaves. A stout butcher's knife, preferably with a skinning blade, is frequently used to cut tobacco plants, but a well-worn cane knife about 2½ inches broad with the end well sharpened will be found effective. Probably a more satisfactory implement could be fashioned by taking half the length of the blade of a cane knife and attaching a handle shaped like a T or that of a saw which will be much easier on the hand.

As soon as the plants are sufficiently wilted to allow of careful handling without damage, they should be placed astride tobacco sticks thrust into the soil at an angle of about 45 degrees pending transfer to the barn or scaffold.

Tobacco sticks are usually about 4 feet 6 inches long so that they will rest securely on the tier poles placed 4 feet apart. Each stick will hold from 5 in the case of very large plants up to 12 of small plants, with an average of 8.

Air Curing.

In air curing, as practised by cigar leaf growers, the plants as soon as possible after being wilted, or the single leaves as soon as strung, are hung in the barn, the sticks being placed close together on the tier poles and the barn closed up for two or three days until the leaf shows a greenish yellow colour, when they are spaced further apart so that the air will freely circulate between. Sticks with the leaves strung thereon would then be spaced about 6 inches apart on the tier poles, while those carrying whole plants would be spaced from 8 to 10 inches.

The ventilators, while the weather is favourable, are now kept fully open so that the tobacco will dry gradually. Should the weather be dry and hot with a drying wind the ventilators on the windward side should be closed and the others so regulated as to prevent a too rapid evaporation. If wet weather prevails and

the air becomes charged with moisture it will be necessary to close all except the top ventilators, and if the leaf becomes very limp to introduce heat by burning some charcoal in holes or trenches cut in the floor so that the atmosphere will become drier.

The correct rate of curing allows the moisture, as it is transpired from the leaf, to be absorbed and carried off by the circulating air. If, as would be the case under a drying wind, the moisture in the leaf is evaporated too rapidly a depreciation in quality would result, while if it remained in too moist an atmosphere, pole burn or a formation of fungus on the midribs of the leaf would occur.

Where the curing is nicely regulated the leaf will change from green to greenish yellow, then to a clear yellow, after which the brown appears. With whole plants

PLATE 50.—FLUE CURING BARN, DEPARTMENT OF AGRICULTURE AND STOCK, BRISBANE. ERECTED AT MODERATE COST.

a cure under satisfactory weather conditions can be effected in six to eight weeks, while with single leaves it will be much less. With the occurrence, however, of wet weather the time of curing will be prolonged and may occupy as long as twelve or fourteen weeks.

Sun Curing.

While cigar leaf is usually cured without exposure to the sun, other classes of tobacco in which a brighter colour in the leaf is desired are either cured partly or wholly under exposure to sunshine. In either case the leaves can be picked singly or the whole plant harvested.

A wilting room or room in which the passage of air can be prevented will be found a convenience. In this the tobacco is placed until the leaf changes to a greenish yellow colour and is then transferred to the scaffold.

If such a room, however, is unavailable the sticks carrying the strung leaf or plants, as the case may be, are placed close together on scaffolds and covered until the desired yellowish colour is obtained. The sticks are then spread out 6 to 10 inches apart and exposed to the sun until the leaf is thoroughly dry. The scaffolds are formed of poles (preferably running north to south) in parallel lines 4 feet apart supported by trestles or forks or posts sunk in the ground.

During the process of sun curing it is advisable to have some form of covering to break the sun's rays in the middle of the day when scorching is liable to occur and to throw off any light shower that may fall, as well as the dew at night. Hessian, calico, or canvas, supported on an overhead wire a foot or so above the sticks and carried on wires at either side will give shade when required and some protection against rain while allowing ease of removal and replacement.

While a light dampening from a shower of rain if dried off immediately will not be very detrimental, a thorough wetting with heavy or prolonged rain can be calculated to seriously reduce the value if not to ruin the leaf.

Varied Curing.

Where it is not practicable to completely sun cure the leaf it can, after becoming nicely yellowed on the scaffold, be removed to the barn and allowed to dry naturally, or the drying can be accelerated by small charcoal fires or the use of a heating flue.

As many growers will be unable to provide the type of curing barn recommended, other buildings or open sheds will be brought into requisition. With these a partial sun curing should be accomplished before the leaf is transferred to the shed, which if open will be improved by walling with hessian or otherwise protecting the sides on which rain is likely to be driven.

The time required for sun curing varies according to atmospheric conditions and the size of the leaf from two to three weeks with primed leaves and from four to six weeks when the whole plant is cured.

Conditioning.

After the tobacco has been cured, which is denoted by the brittleness of the midribs of the leaf and the dryness of the stem, it must be brought into condition before it can safely be handled without damage.

Very frequently during cool nights when there is a heavy dew the leaf is sufficiently ordered by early morning. Where this occurs it is advisable to take the sticks of leaf or plants down from the tier poles and to shingle them to form a bulk, which should be covered with a tarpaulin, bags, rugs, or such like, to prevent the leaf becoming too dry before stripping and grading are completed. Where atmospheric conditions will not allow of conditioning in this manner a conditioning cellar could be excavated or the leaf ordered by the use of steam as suggested with flue-cured tobacco.

Stripping and Grading.

Stripping the leaf is merely pulling it from the stalks, commencing with the lowest on the stem. Opportunity should now be taken to class the leaves into several grades, which are largely determined by their situation on the plant as well as by their colour, length, and freedom from damage. Thus the lower leaves will be of much the same texture and size and could be placed in two piles according to their freedom from damage. Similarly the middle leaves, which are the finest on the plant, as well as the top leaves can be divided in their turn, and later, if thought fit, further classified according to length and colour before being tied into hands.

With leaf primed before curing classing can be as easily effected on removal of the strings, as the sticks, if taken in their order of filling, will carry leaf from the same position on each plant.

A rougher classification, however, could be adopted by assorting merely into colours, undamaged and damaged. Thus a bright yellow colour would indicate the first grade, red to reddish-brown the second, and a darker colour the third grade.

It should be remembered that the more accurate the classification of leaf the better the price it will realise, so a little extra time and care spent in that direction will be well repaid.

After the leaves have been tied into hands they should be strung on sticks and given as much sun as possible on scaffolds outside the barn for a few days in the case of sun cured, and for a couple of weeks in the case of air-cured tobacco other than cigar leaf (which is not sunned), and then brought back into the barn and hung until the whole of the crop is ready for bulking.

Bulking.

In bulking air and sun cured leaf for pipe or cigarette the same procedure is adopted as with flue-cured leaf, no rise of temperature in the bulks being desired. In this connection it is advisable for the leaf, especially that sun cured, to carry just sufficient moisture to allow of safe handling.

The bulking of cigar leaf in which a fermentation with rise of temperature occurs is not referred to, as it requires considerable experience and close attention.

Growers of cigar leaf on experimental areas should pack their tobacco with as little moisture as possible, so that the manufacturer could attend to the fermentation and storage to his own satisfaction.

FILLING THE OVERHEAD SILO.

The proper packing of the material in the silo is most important. If not properly packed or sufficiently tramped to exclude air, spoiled silage results. It is a well-known fact that the more the material is tramped during filling the less it settles afterwards.

When the material settles in the silo, it tends to draw away from the walls, leaving an air space, which results in spoiled silage. The best method is to build the material up about 2 feet around the walls and sloping to the centre, and to trample this down well; then fill the centre up and tramp it around the walls equally, then again build up around the walls, and so on. By this means silage will settle without pulling away from the walls. At the top the silage is rounded off by being made higher in the centre, and within a few days it will settle till nearly level.

Tramping is more important in the upper half and top of the silo, because this silage has less weight bearing on it to force it down.

THE QUEENSLAND NUT.

Illustrations of two clusters of Queensland Nuts, supplied by the Department of Agriculture and Stock, were taken from a tree grown on the property of Mr. C. M. Rehfeldt, of Alberton, and are interesting in that they are illustrative of the productivity of a good variety of *Macadamia ternifolia*. A considerable acreage has recently been placed under nuts in this State, and it is generally acknowledged that nut growing will be an important industry.

The Queensland Nut is universally recognised to be one of the best (if not the best) nuts produced, both for quality and flavour, and, as a consequence, there is a practically unlimited market. We are fortunate in that the nut is indigenous to a large portion of the coastal area of this State, and it may be grown successfully from Cooktown to the border. A feature which should render it very attractive to growers is that it is hardy and easily grown, and once it becomes established it requires little attention beyond the annual gathering of the nuts.

From a commercial standpoint, nut growing is exceptionally attractive. The yield from developed trees varies from 50 to 150 lb., the few trees from which the nuts are sold in Brisbane averaging a cash return of £4 to £5 per annum. Allowing for a reduction of 33 per cent. to 50 per cent., as a result of heavy production, which is extremely unlikely, the net return from expenditure would compare favourably with that from our fruit crops.

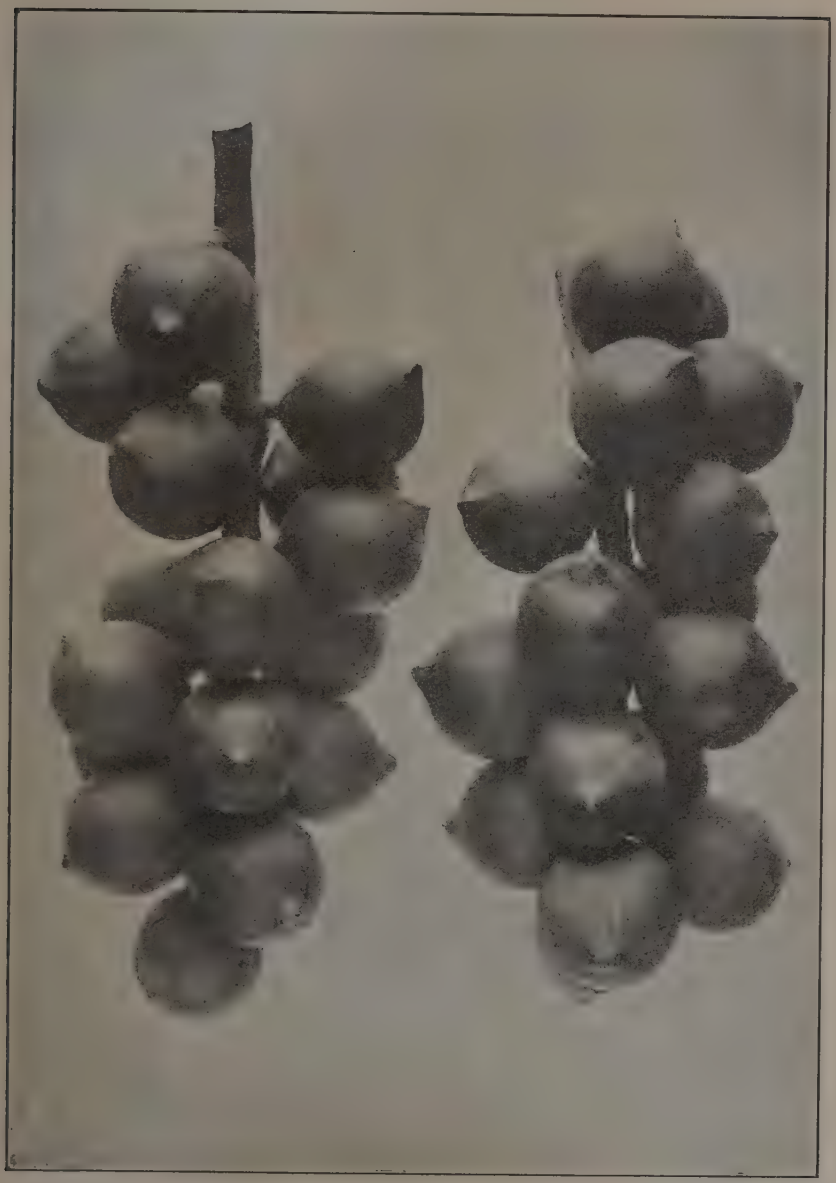

PLATE 51.—QUEENSLAND NUTS.
From a tree growing on Mr. C. M. Rehfeldt's farm at Alberton.
(*See letterpress*, p. 268.)

HOME-MADE LEATHER.

A reader mentions seeing a good sample of home-made leather at a farm in his district, from which the farmer was making his own bridles, reins, straps, and other gear. The cowhide was cured by the following process:—Take one full bucket of burnt lime mixed with enough water to cover hide in a barrel or large milk can. Soak hide for ten days, turning frequently, then take out, spread on floor (concrete for preference), hair side up, and scrape off hair. After taking off all hair, soak for ten days in a bucketful of bran with water to cover; this will clean up the hide. Next soak for ten days in a solution of 10 lb. salt, 10 lb. ground alum, and 1 oz. oxalic acid, mixing the materials together with sufficient water to cover, and turning the hide frequently. Then tack hide on wall and stretch it as tight as possible. When dry it is fit for use.

BREEDING PRODUCTION INTO STUD HERD DAIRY CATTLE.

By C. F. McGRATH, Supervisor of Dairying.

IN the establishment of dairy herds and the improvement of existing ones, while prominence is given to the sire there is a tendency to lose sight of the all-important factors—the breeding and dairy character of the dams that constitute the herd. To ensure success in breeding production into a herd it must be recognised as essential that the dam as well as the sire possess the desired dairy traits.

When reference is made to dairy characteristics it is realised that production stands out as the all-important essential.

An increasing number of our stud breeders and dairy farmers who see clearly the fundamental needs for progress, include production recording in their activities and hold fast to a system that has proven satisfactory to them. The greatest needs of the industry to-day are increased production recording, fodder conservation, and pasture improvement. The time has passed when owners of purebred animals can assume that entry on the rolls of the respective pure breeds associations is a guarantee of high production. There is sufficient evidence to definitely state that registration alone does not designate the better class dairy animal. This is a matter of prime importance to stud breeders and dairymen, who must safeguard their interests by a more definite recognition of the all-important part that production recording plays in the breeding of the better class dairy cattle and its influence on the economic dairy production.

The time is at hand when the governing bodies of agricultural and pastoral associations in the framing of regulations to govern awards in the dairy live stock section should promulgate rules recognising the importance of production recording, and thereby encourage our stud masters to keep in the vanguard as breeders of dairy stock, whose production records will compare favourably with those of animals throughout the dairy world.

The importance of production recording to stud masters is difficult to over estimate. A reference to the work carried out by the testing officers in purebred herds definitely indicates that the percentage of purebred dairy cattle submitted for production recording is far too low. The progressive stud masters have submitted the greater portion of their herds over a period of years, realising that selection and advanced registry recording are essential in ensuring success in the breeding of the better class dairy animal.

Production recording is the most important factor in the progressive grading up of the herds located on the dairy farms throughout the State. All who come in contact with the better class animals of the pure breeds of dairy cattle must be impressed with the vast improvement of the species and encouraged by the results of the intelligent control by generations of stud masters, as reflected in the uniform types and characteristics of animals conforming to the standards of the various societies.

The mind of a student of breeding bridges the gulf of time, separating one generation from another, forming mental pictures of the evolution of the modern dairy cow. The cow possessing dairy characteristics that fills the scrutinising eye of a judge at a live stock show, is the product of intelligent selection, the fusion of blood lines possessing desired characteristics and the elimination of undesirable blood lines. Such constitute the basic principles relied on by stud masters in carrying out the improvement of domestic live stock.

This work has continued over a long period of years throughout which the aim of the stud master was that the pinnacle reached by the animals in the vanguard of his herd in the one generation was the objective to be attained by the rest of his herd the succeeding generation.

The achievement of past stud masters leaves no room to theorise about their methods of breeding, while the results of the work of production recording provides convincing testimony of the service which it has rendered in laying the foundation of the high grade stud herds and the economical production of milk. Production recording is a sound basis on which the stud breeder can lay the foundation of his herd, thereby increasing the value of the stud master's work with benefit to himself, the dairy live stock division, and the dairy industry generally.

PROGRESSIVE DAIRYING PRACTICE.

C. F. McGRATH, Supervisor of Dairying.

GENERALLY speaking, the price of cattle is low and unremunerative to the breeder. There is a good demand, however, for the better class of cattle, and this applies more specifically to the bred-for-production dairy cattle.

The basis of breeding high-class dairy stock is production recording, and the services of the herd testing section of the Department of Agriculture and Stock is being availed of to a greater extent from year to year. The dairy farmer is realising that modern dairy farm practice consists in obtaining the greatest value in dairy products from the area of land dairied.

The class of cows constituting the herd is an all important factor in the economics of dairy farming. The desire to acquire a knowledge of what the cows constituting the herd are capable of producing is directing attention of dairymen to the necessity of herd recording in their efforts to balance their budget.

It is the cow with dairy characteristics, an animal capable of converting the food consumed into milk, that is of value to the dairyman, and success will follow the dairying of cows that will make the best use of the fodders grown on the farm.

The work of the herd recording officers is extending throughout the State from the coastal tableland areas of the far North to the southern boundary.

In the various dairying centres there are leaders in the industry who are keen in their desire to ascertain what their cows are capable of producing yearly and submit their herds for production recording.

They select the dams of their future herd on their individual performance records, excluding the unfit or unprofitable dairy cow, but not ignoring constitution, health, and type. Herd recording is the first step in laying the foundation of a profitable dairy herd. If females are to be purchased a discerning dairy farmer will buy the progeny of production recorded dams.

The results of production competitions carried out on behalf of our Agricultural and Pastoral Associations are indicative of the progress that has been made in the production capacity of the competing animals representative of the various breeds of dairy stock.

The work of herd recording is definitely educational. One cannot locate a dairy farmer, who, having removed nondescripts and unprofitable dairy cows from his herd, is not seized with the importance of the better dairy bull. This work has so progressed that he can fully differentiate between the influence of a better class dairy sire and a poor purebred sire.

By giving attention to the important question of sire selection the greatest progress can be secured. The value of a sire is measured by his ability to transmit dairy qualities to his progeny, a characteristic transmitted by his ancestor as expressed by the yearly records his ancestors have made.

Bred through generations of high producers, a dairy sire will substantially increase the production of an average dairy herd. The influence of the sire will in a few generations determine the character and productive capacity of the herd, and demonstrate that only the better class dairy sires are of value to the dairy farmer and the industry as a whole.

It is encouraging to find that breeders of stud dairy cattle, those who have been established for many years as well as those who are entering the business now, are interesting themselves in the campaign for the use of the better dairy sire—the progeny of ancestors with creditable yearly production records.

The keeping of yearly records and the use of bulls bred from capable ancestors is essential to the success of the industry.

PRODUCTION RECORDING.

List of cows, officially tested by officers of the Department of Agriculture and Stock, which have qualified for entry into the Advanced Register of the Herd Book of the Australian Illawarra Shorthorn Society, the Jersey Cattle Society, the Friesian Cattle Society, the Ayrshire Herd Book of Australia, and the Guernsey Herd Book of Australia, production charts for which were compiled during the period 19th January, 1932, to 29th February, 1932 (273 days period unless otherwise stated):—

Name of Cow.	Age.	Milk Production.	Butter Fat.	Owner.
		Lb.	Lb.	
AUSTRALIAN ILLAWARRA SHORTHORN.				
Maiden of Blacklands	Mature	16,024·975	597·629	A. Pickels, Wondai
Princess III. of Springdale	Mature	13,216·252	487·782	J. Phillips, Wondai
Gold II. of Oakvilla	Mature	10,826·5	464·881	W. Marquardt, Springlands, Wondai
Edna of Rockleigh	Mature	9,917·252	430·992	T. Strain, Wondai
Princess V. of Cascase	Mature	11,427·25	426·301	C. O'Sullivan, Greenmount
Kate of Rockleigh	Mature	9,455·169	422·595	T. Strain, Wondai
Westbrook Lark	Mature	10,790·25	386·820	C. O'Sullivan, Greenmount
Duchess 4th of Oakvilla	Mature	11,277·012	384·486	H. Marquardt, Chelmer, Wondai
Hope 5th of Rosenthal	Mature	8,942	381·282	S. Mitchell, Warwick
Shamrock 6th of Oakvilla	Mature	10,100·067	374·886	W. Marquardt, Springlands, Wondai
Champion 6th of Oakvilla	Snr. (4 yrs.)	9,994·75	396·531	W. Marquardt, Springlands, Wondai
Primrose of Trevor Hill (258 days)	Snr. (3 yrs.)	11,862·42	472·392	G. Gywnne, Umbiram
Jean 4th of Oakvilla	Snr. (3 yrs.)	8,853·847	348·504	W. Marquardt, Springlands, Wondai
Vesta of Euroa	Snr. (3 yrs.)	7,709·5	314·394	H. Lindenmayer, Mundubbera
Helen V. of French View	Snr. (3 yrs.)	7,414·46	307·282	W. J. Barnes, Cedar Grove
Shamrock VII. of Oakvilla	Jnr. (3 yrs.)	10,576·158	445·569	J. Phillips, Wondai
Flossy of Kingsdale	Jnr. (3 yrs).	6,320·75	283·033	W. B. Warren, Yandina
Queenie 10th of Oakvilla	Jnr. (3 yrs.)	9,180·455	367·995	H. Marquardt, Chelmer, Wondai
Duchess 10th of Oakvilla	Snr. (2 yrs.)	9,274·212	339·971	H. Marquardt, Chelmer, Wondai
Fancy II. of Glenleigh	Snr. (2 yrs.)	8,793·75	334·353	C. O'Sullivan, Greenmount
Cherry II. of Oakvilla	Snr. (2 yrs.)	7,484·08	300·370	W. Marquardt, Wondai
Cherry 5th of Tabbagong	Snr. (2 yrs.)	7,459·7	281·686	A. E. Cherry, Gympie
Blossom 2nd of Oakvilla (360 days)	Jnr. (2 yrs.)	12,189·054	475·485	H. Marquardt, Chelmer, Wondai
Fancy of Manillus	Jnr. (2 yrs.)	9,173	339·540	C. O'Sullivan, Greenmount
Ivo III. of Dnalwon (272 days)	Jnr. (2 yrs.)	8,361·25	309·47	A. J. Caswell, Wongalpong
Bumper 4th of Rhodesview	Jnr. (2 yrs.)	7,669·98	298·62	W. Gierke and Sons, Helidon
Duchess of Widgee Waa	Jnr. (2 yrs.)	8,645·68	290·867	A. J. Caswell, Wongalpong
Blacklands Dulcie	Jnr. (2 yrs.)	6,193·12	237·897	P. J. Skerman, Kaimkillenbun
JERSEY.				
Carlyle Melba	Mature	9,588·12	436·601	J. Williams, Greenview, Wondai
Cressbrook Olive	Mature	6,946	370·797	J. B. Keys, Gowrie Little Plains
Trecarne Roselea	Jnr. (4 yrs.)	7,036·88	352·874	T. A. Petherick, Lockyer
Trecarne Madeira 3rd	Jnr. (4 yrs.)	5,607·46	335·201	T. A. Petherick, Lockyer
Carnation II. of Woodlands	Snr. (3 yrs.)	7,833	442·363	D. R. Hutton, Cunningham
Majestys Kate of Brooklands	Snr. (3 yrs.)	5,696·25	297·849	W. S. Conochie, Sherwood
Lyndhurst Lotus 2nd	Jnr. (3 yrs.)	9,680·45	485·540	J. B. Keys, Gowrie Little Plains
Glenview Favourite	Jnr. (3 yrs.)	5,823	311·985	Fowler and Sons, Coalstoun Lakes
Trecarne Roselea 2nd	Snr. (2 yrs.)	5,171·89	339·01	T. A. Petherick, Lockyer
Glengariffe Nobles Leda	Snr. (2 yrs.)	4,585·9	256·905	Cox Bros., Maleny
Countess III. of Woodlands	Jnr. (2 yrs.)	7,685·13	342·246	D. R. Hutton, Cunningham
Pearl of Burnleigh	Jnr. (2 yrs.)	4,864·45	285·926	W. Mallett, Nambour
Dulcie of Burnleigh	Jnr. (2 yrs.)	4,337·75	255·711	C. F. Klaus, Mundubbera
FRIESIAN.				
Maria Field of St. Athan	Mature	13,635·98	518·093	W. Richters, Tingoora
St. Athan Queen Rose VII.	Snr. (2 yrs.)	9,242·9	300·153	G. Newman, Wyreema
Oaklands Holly Pearl	Jnr. (2 yrs.)	7,486·12	281·47	W. Richters, Tingoora
Oaklands May Rock	Jnr. (2 yrs.)	7,708·93	276·625	W. Richters, Tingoora
AYRSHIRE.				
Claredale Nancy	Snr. (4 yrs.)	10,410·25	410	T. Holmes, Yarranlea
GUERNSEY.				
Laureldale Patricia	Jnr. (2 yrs.)	5,373·05	291·589	R. Mackie, Maleny

List of cows, officially tested by officers of the Department of Agriculture and Stock, which have qualified for entry into the Advanced Register of the Herd Book of the Australian Illawarra Shorthorn Society and the Jersey Cattle Society, production charts for which were compiled during the period 1st to 31st March, 1932 (273 days period unless otherwise stated):—

Name of Cow.	Age.	Milk Production.	Butter Fat.	Owner.
		Lb.	Lb.	
AUSTRALIAN ILLAWARRA SHORTHORN.				
Doris of Hawthorne	Jnr. (4 yrs.)	10,757·86	400·257	H. M. Graham, Goomeri
Bella 8th of Thornleigh	Snr. (3 yrs.)	7,762·272	291·776	Queensland Agricultural High School and College, Gatton
Bella 18th of Fairlie	Jnr. (3 yrs.)	7,236·5	302·520	C. B. Mitchell, Warwick
Blossom 10th of Fairlie	Snr. (2 yrs.)	8,993·5	374·529	C. B. Mitchell, Warwick
Florrie VI. of Blacklands	Snr. (2 yrs.)	9,855·8	324·733	A. Pickles, Wondai
Killarney 7th of Fairlie	Snr. (2 yrs.)	7,359·25	322·487	C. B. Mitchell, Warwick
Primrose 20th of Springdale	Snr. (2 yrs.)	7,758·32	283·423	W. Gierkie and Sons, Helidon
Fuschia 12th of Fairlie	Jnr. (2 yrs.)	6,652	292·514	C. B. Mitchell, Warwick
Betty of Westbrook	Jnr. (2 yrs.)	6,504·32	261·247	F. G. Cooper, Westbrook
Elaine of Euroa	Jnr. (2 yrs.)	6,115·5	254·846	H. Lindenmayer, Mundubbera
Chrissie 7th of Fairlie	Jnr. (2 yrs.)	6,020·5	247·471	C. B. Mitchell, Warwick
College Duchess	Jnr. (2 yrs.)	5,198·5	235·060	Queensland Agricultural High School and College, Gatton
Doreen 17th of Rosemount	Jnr. (2 yrs.)	6,265·35	234·695	A. J. Bryce, Maleny
JERSEY.				
Golden Fern of Cooroibah	Mature	7,960·5	471·700	Hurst Bros., Nerang
Ianthe of Armley Park	Mature	8,694·955	416·455	Hurst Bros., Nerang
Silk of Woodstock	Mature	7,717·5	399·008	Hurst Bros., Nerang
Golden Buttercup of Morago	Mature	6,093·75	356·383	J. W. Evans, Boonah
Oxford Brighteyes II.	Jnr. (4 yrs.)	6,385·18	382·195	E. Burton and Sons, Wanora
Managers Princess of Woodstock	Snr. (3 yrs.)	6,800·25	372·492	Hurst Bros., Nerang
Hillside Noble Princess	Snr. (3 yrs.)	6,494·3	304·279	H. M. Thomason, Mt. Mee
Lyndhurst Molly	Jnr. (3 yrs.)	11,827·92	571·178	J. B. Keys, Gowrie Little Plains
Ellerdale Nobility's Dewdrop	Jnr. (3 yrs.)	6,363·2	361·164	H. M. Thomason, Mt. Mee
Trecarne Milkmaid 5th	Jnr. (3 yrs.)	6,076·4	313·324	J. B. Keys, Gowrie Little Plains
Carnation Success	Jnr. (3 yrs.)	5,205·92	280·606	Spresser and Sons, Brassall
Wyreene Toddles	Jnr. (2 yrs.)	6,027·6	388·341	J. B. Keys, Gowrie Little Plains
Oxford Bluebird	Jnr. (2 yrs.)	6,850·73	350·520	E. Burton and Sons, Wanora
Lyndhurst Marella	Jnr. (2 yrs.)	5,632·02	306·004	J. B. Keys, Gowrie Little Plains
Glenview Holly	Jnr. (2 yrs.)	4,821·5	275·728	Fowler and Sons, Coalstoun Lakes
College Avro	Jnr. (2 yrs.)	4,297·231	236·667	Queensland Agricultural High School and College, Gatton

SOWING RATES FOR LUCERNE.

Lucerne has well been called the "king of fodders," and, with sowing time at hand, it is well worth any farmer's while to consider the advisability of devoting some area to this crop. The heaviest yields are obtained on the best alluvial soils, but the plant is much less exclusive in its requirements than was once supposed, as evidenced by its increasing use for grazing in the drier districts. In fact, it is seldom safe for a farmer to say that lucerne will not grow profitably on his land before he has tried it.

The quantity of seed necessary varies. In the regular lucerne districts of the State from 12 lb. to 15 lb., and even 20 lb., per acre should be sown. For dry districts, 6 to 8 lb. will be found quite sufficient if evenly applied. For grazing purposes in dry districts 2 to 3 lb. seed per acre is ample.

It is not wise to run the risk of a thin crop through a little parsimony in seeding. It is all-important, with a permanent crop such as lucerne, that a good stand should be obtained at the outset. Reseeding cannot be done without again breaking up the land, and this means that a year or more is lost. If reseeding is not done, the yields are permanently affected through the poor stand. Attempts are sometimes made to remedy unsatisfactory stands by sowing further seed, but they are seldom successful. The soil is not in a receptive condition, and what plants do grow have to contend with established vigorous plants.

At the same time it is a mistake to endeavour to remedy defects in preparation, or in the state of the soil, by heavier seeding. Favourable conditions are required to promote germination and to help the young plant, and seeding should only be done after they have been obtained. If the ground should happen to be dry at seeding time, heavier seeding will not secure a proper stand.

CONTAGIOUS ABORTION

By J. A. RUDD, L.V.Sc., Veterinary Surgeon, Department of Agriculture and Stock.

THE special treatment of dairy cows for abortion depends largely as to whether it is (i.) Contagious abortion (*a*) Curable, (*b*) Incurable; (ii.) Sporadic abortion; or (iii.) Troubles after calving.

(*a*) Contagious abortion may be curable if it is due to the bacillus coli, provided certain very definite steps are taken to prevent its spread, such as isolation of aborting cattle for at least three weeks and the flooding of the uterus with permanganate of potash, 20 grains to each gallon of sterile water.

If the placenta or cleanings are not voided, the following drench will assist in causing expulsion of the placenta:—

Epsom salts	12 oz.
Carbonate of ammonia	1 oz.
Powdered gentian	1 oz.
Powdered ginger	1 oz.
Treacle	1 lb.
Water	1 gal.

After the lapse of twenty-four hours, syringe out or flood the uterus by gravitation with the above solution if the placenta has been voided, if not repeat the drench. This is very seldom necessary.

(*b*) Contagious abortion due to the bacillus abortus is incurable and is very serious indeed. Adopt the foregoing treatment and, in addition, isolate the cow for six weeks after calving or after she has aborted, and dispose of the fœtus and placenta by fire if possible. The discharge from the uterus is highly contagious and generally persists for about four weeks after calving.

The proper method is to differentiate from the first by means of a blood test, and if the test is positive the best plan is to spey the cow and fatten her for the butcher.

How Infection is Spread.

The method of infection is chiefly through the mouth, and the predilection seat is the uterus if the cow is in calf, and if not the mammary gland where it remains until the cow becomes pregnant and then it enters the uterus. Cow licking a cow which has aborted. The exudate from the septic uterus draining down the thighs and tail becomes spread about the body through the agency of the tail, and it may even reach the bodies of other cows in this way. The bull may also carry the organism and infect a cow during copulation, and when the cow aborts the bacillus gravitates to the mammary gland. The placenta and fœtus is capable of infecting a cow after it has laid out in the paddock exposed to climatic changes for some months, even up to eighteen months as proven by experimental evidence.

The Blood Test.

The blood test for contagious abortion can be carried out at the Yeerongpilly Stock Experimental Station, where information as to drawing the blood for the test may be obtained.

Seriousness of the Disease.

Contagious abortion caused by infection with the bacillus abortus is very serious because it is directly responsible for—

(i.) Ninety per cent. of all the in contact or infected cows of a herd aborting.

(ii.) Thirty per cent. of sterility among the aborting cows of the same herd.

(iii.) Possibility of a large percentage of cows not holding to the bull at first service.

(iv.) Sterility among bulls in the affected herd.

(v.) Losses from white scour of 70 per cent. of calves born of recently infected parents which carry a relative immunity to the disease. Calves from these infected parents are frequently born with white scour.

(vi.) Septic pneumonia of calves born of infected parents which carry a relative immunity which is practically incurable.

(vii.) Infection from these calves is very liable to spread to healthy calves born of parents which are free of this disease.

(i.) The statement that 90 per cent. of the cows abort when a herd is infected with the Bacillus Abortus of Bange may probably be considered high, but it is fairly constant if the abortions which prevail in the herd during the first two years after the first cow is a proven aborter is taken into consideration.

(ii.) *Thirty per cent. sterility among aborting cows.*—It is during the first three years after the first cow has been proven a contagious aborter in a herd that this second trouble arises, but unfortunately it does not end there. Even with the greatest care in after treatment, which is more than the average farmer can possibly spare the necessary time to carry out, it gradually extends to the best producers in the herd, and this for no apparent reason. There will be found, too, some cows in the herd which have never been known to abort, but for some unknown cause they will not prove in calf.

(iii.) The possibility of a large percentage of cows not holding to the bull at first service, but coming back repeatedly even when a fresh bull has been introduced into the herd, is always present. This may easily prove disastrous in a pure herd, for all blood lines of a particular strain may thus easily be lost for ever and the ultimate objective of the breeder shattered almost to despair.

(iv.) *Sterility among stud bulls in the affected herd.*—It has been repeatedly stated that the bull is not a carrier, even if infected by the Bacillus Abortus of Bange. If such is true, how then is it possible to find nests of this same bacillus abortus in the epididimi of the testicles of infected bulls, which readily react to a blood test for the bacillus abortus, and how is it that such a bull can, if he is not badly infected at the time of mating, serve and stint clean cows which are not infected and which abort four months after being stinted, not having up to that time been in contact with any infected cattle? This is fairly clear proof that a bull can carry the bacillus abortus and spread the disease. Therefore, the wandering bull which is to be found in all the dairying districts of this State should not be tolerated. How often does a careful dairy farmer find his own bull secure in his bull paddock and his neighbour's bull following his herd into his yard, and perhaps his best stud cow in calf to a useless bull of doubtful pedigree?

(v.) *White scour among calves born full time of parents which have a relative immunity to contagious abortion.*—This is fairly constant among such calves, and I have known cases which were affected with white scour at the time of birth. This disease in these calves is not only hard to cure, but when they are cured they do not prove to be regular breeders when mature. At best they are only fitful breeders and are more often running in the paddock half fat than producing at the pail. When they are milking and come into œstrum and mated to a proven bull they do not come on again, but give the impression that they have been stinted and at the lapse of nine months, when they should be calving and coming into profit, they upset calculations by coming in to œstrum again being served and perhaps stinted for the second time in eighteen months. Others again come on regularly every twenty-one days as heifers, and never seem to hold to the bull and remain to be ultimately fattened for the butcher.

(vi.) Septic pneumonia of calves born of parents carrying a relative immunity to the contagious abortion bacillus is not very common, but once it makes a start it runs through a herd of calves, whether they are the offspring of contagious aborters or not. It makes a clean sweep, and unless vigorous measures are practised the whole crop of calves for that particular season is wiped out. Therefore, it is not advisable to purchase calves indiscriminately or introduce them into a healthy herd of calves from outside sources in case they carry infection into the herd.

Sterility among dairy cows which have never aborted and are not positive to the test for contagious abortion may be due to the abovementioned causes, although there is no known means of ascertaining the truth. But if it is possible to trace back their ancestry, it will be found that contagious abortion due to bacillus abortion is responsible for their sterility, either partially or wholly, as it affects them to a greater or lesser extent.

INTRODUCTION OF THE STUD BULL.

No fresh bull or cow should be introduced into a clean herd without going through the blood test for contagious abortion. It is possible to do this without the assistance of a qualified veterinary surgeon by getting into touch with the Yeerongpilly Stock Experimental Station, or either of the Commonwealth Government Laboratories at Rockhampton or Toowoomba at a very small cost. The introduction of a fresh bull should not be seriously considered without the test for tuberculosis, and the cost of the services of a qualified veterinary surgeon should be the first cost on the price of the bull.

Not long since, a bull on the North Coast was responsible for the introduction of contagious abortion into a clean herd of cattle, and all the trouble would have been saved if a blood test had been carried out before the bull was introduced into the herd.

Immunity and Relative Immunity.

Immunity means that an animal once it is infected with a disease and recovers never has a recurrence of the same disease, but is immune to this disease for the rest of its life.

Relative immunity means that an animal, once it is infected with a disease and recovers from the disease, may during its lifetime have a recurrence of the same disease—i.e., it is not a lasting immunity. With contagious abortion the animal carries a relative immunity and, in addition, remains a carrier of the disease during its lifetime and may have a recurrence of the disease in a virulent form.

SPORADIC ABORTION.

Sporadic abortion is not contagious and may be due to accidents which cannot well be avoided. Lack of phosphates in the soil, and feeding on mouldy fodder may be cited as some of many causes.

The treatment already given will answer the purpose and bring the cow back to health and in due time she will recover her normal state.

TROUBLES AFTER CALVING.

Ninety per cent. of the post-calving troubles are due to neglect of simple precautions, and the crude methods involved in dealing with the calves. The calves should be allowed to run at least for two days with their dams, as the sucking action of the calf assists in the contraction of the uterus or calf bed, and the rapid expulsion of the contents of the uterus and the return to normal of this important organ of reproduction assists the general health of the animal concerned, and gives her an opportunity to render useful service at the bucket. The calf should be at least easily accessible to the cow for the first six weeks after calving. So long as she can see her offspring she appears satisfied and content, but the call of the hungry calf which is very distressing does at all times upset the mother. There are some cows, and not always the best, that take little notice of their offspring, being more concerned with their own petty troubles. The cow which should be encouraged is one which makes it a practice of making the care and well-being of her calf a matter of constant concern, for the maternal instinct is strongly developed and, proportionately, her ability to do well at the bucket and conceive regularly at certain given intervals is greatly increased. At least for the first seven days after calving a good mother is always within earshot of her calf, and she should be allowed this as it is her natural right. If a cow has calves normally and there is little or no discharge, it is a grave mistake to interfere with her at all in the way of flooding the uterus and, except for cleansing of her tail and brush and back of the udder and perhaps the udder itself with good soap and water as soon as the calf is taken away, she should be left severely alone.

The clipping of all hair in and around the udder as far forward as the naval should be practised as a routine work on every dairy farm, for the long hairs collect the filth and predispose the large, well-developed udder to mastitis which is usually contagious.

Flooding of the uterus with blood due to hæmorrhage may take place nine days after calving, and although this is not a constant symptom it does occur and, provided it is not excessive, it could well be left alone. The calf should be fed, if possible, on mother's milk for at least three weeks before being placed on the mixed milk ration.

Septic Pneumonia Among Cows.

Septic pneumonia among aborting cows or cows which have a relative immunity to contagious abortion and have recently come into profit, or are in contact with contagious aborters is fairly common, especially among the best heavy producing cows, and frequently the response to treatment is not all that can be desired, and consequently the percentage of deaths among these cows is fairly high. On the outset of septic pneumonia the affected cows should be isolated and treated away from the main herd, and prompt action is necessary if satisfactory results are to be assured. The cows should be placed under cover, well bedded down, have easy access to ample clean water in the stall, and the services of a qualified veterinarian obtained and steps taken to bring about rapid recovery, for if the case hangs fire the profit for the year is completely lost even if the cow survives.

CLIMATOLOGICAL TABLE—MARCH, 1932.

SUPPLIED BY THE COMMONWEALTH OF AUSTRALIA METEOROLOGICAL BUREAU, BRISBANE.

Districts and Stations.	Atmospheric Pressure. Mean at 9 a.m.	Shade Temperature. Means.		Shade Temperature. Extremes.				Rainfall.	
		Max.	Min.	Max.	Date.	Min.	Date.	Total.	Wet Days.
Coastal.	In.	Deg.	Deg.	Deg.		Deg.		Points.	
Cooktown	29·90	85	76	88	8, 27	72	2, 15	1,925	19
Herberton	..	78	63	83	17	59	16, 17	410	11
Rockhampton	29·98	90	71	97	20	67	11, 29	30	5
Brisbane	30·04	84	68	90	20	63	30	146	8
Darling Downs.									
Dalby	30·01	89	63	97	20	52	23	7	2
Stanthorpe	..	82	57	89	16	48	21, 23	65	4
Toowoomba	..	82	60	91	20	53	21	42	3
Mid-interior.									
Georgetown	29·86	92	71	97	19, 20	61	31	316	10
Longreach	29·91	97	71	101	7, 16	63	29	10	2
Mitchell	29·97	89	63	98	1	48	22	246	6
Western.									
Burketown	29·85	90	75	98	31	70	9, 31	1,095	8
Boulia	29·87	97	72	105	1, 5	57	29	86	4
Thargomindah	29·93	92	68	104	1, 7, 14, 15	52	28	117	3

RAINFALL IN THE AGRICULTURAL DISTRICTS.

TABLE SHOWING THE AVERAGE RAINFALL FOR THE MONTH OF MARCH, IN THE AGRICULTURAL DISTRICTS, TOGETHER WITH TOTAL RAINFALL DURING MARCH, 1932, AND 1931 FOR COMPARISON.

Divisions and Stations.	Average Rainfall. Mar.	Average Rainfall. No. of Years' Records.	Total Rainfall. Mar., 1932.	Total Rainfall. Mar., 1931.
North Coast.	In.		In.	In.
Atherton	8·55	31	6·46	2·87
Cairns	17·93	50	20·28	8·58
Cardwell	15·90	60	11·14	8·95
Cooktown	15·07	56	19·25	5·19
Herberton	7·90	45	4·10	1·38
Ingham	15·76	40	15·65	17·86
Innisfail	26·24	51	22·77	7·60
Mossman Mill ..	17·03	19	22·83	9·77
Townsville	7·41	61	7·04	4·60
Central Coast.				
Ayr	6·72	45	2·65	5·10
Bowen	5·71	61	1·69	2·20
Charters Towers ..	3·83	50	3·20	0·65
Mackay	12·14	61	2·58	4·69
Proserpine	12·20	29	4·69	5·43
St. Lawrence	5·38	61	0·89	0·84
South Coast.				
Biggenden	3·98	33	0·49	3·60
Bundaberg	5·22	49	0·12	6·91
Brisbane	5·77	81	1·46	14·92
Caboolture	7·79	45	2·39	15·13
Childers	4·63	37	1·48	6·59
Crohamhurst ..	11·48	39	3·06	18·43
Esk	4·92	45	0·59	4·80
Gayndah	3·12	61	0·11	6·39
Gympie ..	6·29	62	0·77	9·75
Kilkivan	3·99	53	0·27	8·36
Maryborough ..	6·03	60	0·18	5·56
South Coast—continued:				
Nambour	9·45	36	3·00	13·86
Nanango	3·50	50	0·85	5·25
Rockhampton ..	4·51	45	0·30	1·37
Woodford	8·07	45	1·90	12·18
Darling Downs.				
Dalby	2·75	62	0·07	2·25
Emu Vale	2·46	36	0·25	1·87
Jimbour	2·62	44	0·59	2·40
Miles	2·73	47	0·70	3·86
Stanthorpe	2·68	59	0·65	1·87
Toowoomba ..	3·83	60	0·42	5·25
Warwick	2·55	67	0·13	2·40
Maranoa.				
Roma	2·64	58	1·05	3.75
State Farms, &c.				
Bungeworgorai ..	1·61	18	0·58	2.67
Gatton College ..	3·26	33	0·04	4·30
Gindie	2·63	33	2·20	1·85
Hermitage	2·26	26	0 07	2·71
Kairi	7·66	18	8·21	1·22
Mackay Sugar Experiment Station ..	11·13	35	0·76	5·31

J. H HARTSHORN, Acting Divisional Meteorologist.

Answers to Correspondents.

BOTANY.

The following answers have been selected from the outgoing mail of the Government Botanist, Mr. C. T. White, F.L.S., and the Assistant Botanist, Mr. W. D. Francis:—

Guinea Grass.

G.F. (Wynnum South)—

The specimen has been determined as Guinea Grass, *Panicum maximum*. According to analysis this is a nutritive species. In Brazil it is a favourite grass for stall fodder, but there it has sometimes been found necessary to guard against over-feeding with this grass alone in a rank state. It is also said to be excellent material for silage. It would be a good grass for milking cows, but we have no idea as to whether it is suitable for hay-making. It is not poisonous, and would not be likely to cause hoven unless stock were overfed with it.

Carpet Grass.

D. (Carmila)—

The specimen is Carpet Grass, *Axonopus compressus*. This grass is a fairly good fodder for medium and poor class lands where better class grasses, such as ordinary Paspalum and Rhodes, will not thrive. It is a fairly good grass for a lawn, but is inferior to Blue Couch.

Grasses Identified.

G.N. (Brinsop, Western Line)—The three grasses have been determined as follows:—

Thellungia advena, a grass very common over the Downs country and very similar in appearance to the common Rat's Tail. We have not heard a common name applied to it, and have no records of its feeding value, but should not consider this to be very high as the grass is rather coarse. Do you know if stock eat it to any extent?

Pappophorum nigricans, a very common grass in Western Queensland.

Andropogon annulatus var. *monostachya*, a species of Blue Grass, and generally regarded as of high fodder value.

Suspected Plants Identified.

B. (Mackay)—

The plant with long pods or beans and a pea flower is *Phaseolus semierectus*, a plant introduced into Queensland some years ago as a fodder but now common as a naturalised weed. It is not known to be poisonous or harmful in any way.

The plant with the brown fruits or berries is *Grewia polygama*, very common in North Queensland, and often used successfully as a cure for diarrhœa and dysentry. It is not known to be poisonous or harmful in any way.

The third plant with greenish insignificant flower heads is *Eclipta alba*, a common tropical weed not known to possess any harmful properties.

We should say fairly definitely that none of these plants is responsible for the trouble among your horses.

Wild Parsnip.

H.B.S. (Charleville)—The specimens you send are—

1. *Trachymene australis*, Wild Parsnip. (Flowers, very pale yellow.)
2. *Angianthus pusillus*. (Flowers, bright yellow.)

So far as known neither of these plants is poisonous to stock. At one time the Wild Parsnip was suspected of poisoning stock in New South Wales, but subsequently it was found that the mortality was due to anthrax.

South Burnett Plants Identified.

G.H. (Wooroolin)—The specimens have been determined as follows:—

1. *Solanum* sp. These plants are very common on the edges of scrubs and are popularly known as Devil's Needles. They belong to a dangerous family, but deaths from them are very rare as stock rarely eat sufficient of them to cause trouble.
2. *Parsonsia lanceolata.*
3. *Parsonsia velutina.* These plants belong to a family, the Apocynaceæ, which contains some poisonous species. They have been suspected at various times of poisoning stock, but we think on insufficient evidence. They are extremely common in Queensland, and, generally speaking, we do not think they are eaten to any great extent by stock.
4. *Tecoma australis*, the Wonga Wonga Vine, not known to be poisonous or harmful in any way.
5. *Jasminum* sp. A Native Jasmine, not known to be poisonous or harmful in any way.

If plant poisoning has been the cause of the trouble in your cattle we would be inclined to look elsewhere.

Wild Millet.

J.C.R. (Maleny)—

The specimen is a form of *Echinochloa crus-galli*, commonly known as Wild Millet. It is quite a useful fodder grass, especially in damp situations, and is supposed to be one of the wild parents of such well-known cultivated fodders as Japanese Millet and White Panicum. It is not known to be harmful to stock at any stage of its growth, but being very succulent may cause bloat if fed too heavily on an empty stomach.

Cape Spinach.

E.W. (Kulara)—

The specimen of burr is *Emex australis*, variously known as Cape Spinach, Bull Head, and Cats' Heads. It is a native of South Africa and was brought over in the early days as a green vegetable, but soon proved itself a bad weed pest. It is very abundant in the Southern States, and of late years has become established on the Darling Downs in Queensland.

The other plant is *Solanum Seaforthianum*, commonly known in Queensland as Deadly Nightshade, a name, however, applied to many plants of the family Solanaceæ. It is a native of the West Indies and Tropical America, and of late years has spread over much country in various localities in Queensland. The berries are poisonous, and children have been made violently ill from eating them, though no cases of death have, so far as we know, been reported. The birds apparently eat the berries with impunity, as by them the plant is widely spread over the scrub areas, the plants coming up in great numbers after a burn-off. The plant is allied to and superficially like the Woody Nighshade or Sweet Bitter Nightshade referred to in your English book.

Spear Grass.

P.L.K. (St. George)—

The specimens represent a species of spear grass, *stipa setacea*. This particular species is valuable in the pastures of the western slopes of New South Wales, and in Queensland it appears to be more nutritious than the other species of spear grasses common in this State.

Canary Grass.

A.C.V.B. (Brookstead)—

The specimen is one of the canary grasses, *Pharlaris paradoxa*. It is a native grass which has evidently been introduced into Queensland from the Southern States. As a rule these native canary grasses are good for fodder, although they are, in some cases, a pest in wheat paddocks.

"Portuguese Elm."

M.O'C. (Mungallala)—

The specimen is *Celtis sinensis*, a native of Western China, much cultivated as an ornamental tree in Queensland. It has the added advantage that the leaves are a valuable fodder for stock. It is often called Portuguese Elm, but this name more correctly belongs to another species, *Celtis australi*, a native of Southern Europe. Nettle Tree is a name sometimes given to members of this genus.

The Papaw.

A.M.S. (Ubobo)—

Some people regard the Papaw, particularly a male tree, as unhealthy if planted near a bedroom. The only harm, however, that it could possibly do would be, we should say, to a sufferer with hay fever who may be susceptible to the pollen of the Papaw. Go on planting, but should you find that when the tree is flowering you suffer from hay fever because of the pollen from the Papaw it might be as well to cut the plant out. Fortunately most people seem more or less immune to this trouble. Some, of course, carry the belief so far as not to have any flowers in the house at all.

Some of the modern races of Papaw are more or less bi-sexual. It is, of course, the female tree that bears most fruit, and to ensure that the fruit is properly formed it is just as well to have a male tree in the vicinity. There is no very reliable method of telling the male from the females in the seedling stages, though we have found it to work out rather well to regard the more vigorous seedlings as male and the less vigorous ones as females.

Hoya Vine.

INQUIRER (Brisbane)—

The specimens taken from the stomach of a poisoned beast evidently represent *Hoya australis*, the Hoya Vine or Wax Flower. This vine is poisonous to stock, causing severe gastro-enteritis and often death.

Bird's Foot Trefoil.

J.B. (Roma)—

The smaller specimen is *Lotus australis*, the Bird's Foot Trefoil. This is quite a valuable forage plant, but like some other herbage and grasses it contains a prussic acid yielding glucoside, and when eaten in quantity by hungry stock may cause death very quickly. If death was very sudden with the ram in question and he had access to this plant this is most likely the cause of the trouble. The larger specimen is *Swainsona procumbens*, a plant of the same genus as the Indigo or Darling Pea. It is thought to have the same properties as the Darling Pea, but this has not been definitely proved by feeding tests.

Star Thistle.

E.J.T. (Charleville)—

The thistle-like plant is *Centaurea melitensis*, the Star Thistle, a very bad weed in Queensland, especially on the Darling Downs, and also in the Southern States. In New South Wales it is commonly known as Saucy Jack. It is eaten by stock in its young stages, but soon becomes unpalatable. However, it is not known to possess any poisonous or harmful properties.

Prickly Poppy.

H.B. (Gayndah)—

The specimen is the Mexican or Prickly Poppy, *Argemone mexicana*. When this plant is growing in paddocks it is rarely touched by stock, but if it is cut and dried with lucerne there is the danger of poisoning. In the circumstances it would not be advisable to cut this Prickly Poppy with the lucerne. It is inferred from your letter that there is too much of the poppy present to be easily eradicated before cutting the lucerne, and if this is so it is very unfortunate that you cannot make use of the lucerne as ensilage.

General Notes.

Staff Changes and Appointments.

Mr. E. C. G. Olsen, the lessee of Picnic Point Park, Toowoomba, has been appointed an Honorary Ranger under the Animals and Birds Acts and the Native Plants Protection Act.

Mr. H. H. P. Somerset, of Caboonbah, has been appointed an Honorary Ranger under the Animals and Birds Acts.

Mr. J. H. McCarthy, Inspector of Stock at Dalby, has been appointed District Inspector of Stock, and will be attached to the Hughenden District.

Messrs. H. S. Skyring, W. S. Donaldson, and G. E. Kendall, of Bundaberg, have been appointed Honorary Rangers under the Animals and Birds Acts for the recently declared sanctuaries in the Woongarra Shire, Bundaberg.

Mr. B. O. Atherton, B.Sc., Assistant to Entomologist, Department of Agriculture and Stock, will be transferred from Biloela to Cairns as from the 26th April, 1932.

Mr. C. G. Maughan, Rubyanna road, Bundaberg, has been appointed an Honorary Ranger under the Animals and Birds Acts.

Mr. Victor William Gorey, caretaker of the Rifle Creek Dam, Mount Isa, has been appointed an Honorary Ranger under the Animals and Birds Acts.

Acting Sergeant W. Watson, Coen, and Constable G. J. Cochran, Duaringa, have been appointed also Inspectors under the Slaughtering Act.

Messrs. C. P. Kemnis and F. B. King have been appointed Millowners' Representatives on the Tully Local Sugar Cane Prices Board, vice Messrs. H. Henry and C. J. Magee, resigned.

Mr. W. C. Woodhouse, District Inspector of Stock, will be transferred from Cloncurry to Maryborough on the 1st June next.

A Progressive Farmer.

Mr. W. Koehler, of the Yamsion Stud Piggery, Yamsion, near Dalby, writes:—

"Sales of stud pigs have been somewhat slack of late, but we have some excellent young stock out of our popular prize-winning Duroc-Jerseys, and a fine litter of Tamworths from recently purchased strains, Brisbane Show winners. We have been very busy getting the corn planted on the new burn and have about 200 acres above ground and another 50 acres to plant. We have about 50 acres of pumpkins planted, and if the crop turns out well, we intend to put in a few hundred store pigs to eat the crop and follow out your advice to "Walk the crops to market." We were very lucky in getting a good burn on the new block of 280 acres, but it has meant a lot of work getting it all sown with grass. We also have a nice crop of potatoes on our block up in the Bunya Mountains. We hope other breeders will follow our advice to grow all the feed they possibly can and thus reduce cost of production of the stock they produce and market."

Winter Sales of Australian Furs.

The Minister for Agriculture and Stock (Mr. H. F. Walker) has recently been supplied, by the Acting Agent-General for Queensland (Mr. L. Pike), with details of the winter sales of Australian furs, held in London on the 21st and 22nd January last.

Opossums showed an average advance of 5 per cent. on previous sales, but the best quality skins were difficult to sell, the advance being on the medium colours and pales, but reds were frequently rather cheaper in price than at previous auctions. The offering of opossums of all origins totalled 956,800, of which 718,300 were sold. The home trade was largely responsible for the bulk of purchases. The best price paid for Southern Queensland large blue opossums of good quality and colour was 6s. 1d. per skin, and for the best pales 4s. per skin, but these prices were only obtainable for very good qualities.

The Acting Agent-General advised that it was difficult to give any data as regards supplies, but it is estimated that about 1,400,000 opossum skins are still available in London, as the Queensland supplies from the recent open season were much larger than at first anticipated.

Gympie a Sanctuary.

The City of Gympie has been declared a sanctuary under and for the purposes of the Animals and Birds Acts, and it will, in future, be unlawful for any person to take or kill any animal or bird within the boundaries of the City of Gympie.

Registration of Banana Orchards.

The Governor in Council has approved of the issue of an Order in Council under the Diseases in Plants Acts, amending an Order in Council issued in February, 1930, which provided that every grower of a banana orchard established for the purpose of obtaining a monetary return therefrom should apply for registration of his orchard before the 31st March in each year, and forward the sum of 5s. with each application for registration.

The amendment provides that a fee of 5s. shall be payable in respect of a first application for registration, but no fee is required for any subsequent registration. Annual registration of orchards is, however, still compulsory.

Game Laws Broken.

The Minister for Agriculture and Stock (Mr. H. F. Walker) made reference recently to certain Press reports from which it is evident that breaches of the Regulations under "*The Animals and Birds Acts*, 1921 *to* 1924," dealing with the protection of ducks and quail, have been committed.

Reports from the Charleville district indicate that organised duck shooting parties were formed recently, and that large bags of game have been secured. Inquiries have been instituted, and suitable action will be taken if the information contained in the Press is officially substantiated. Penalties are provided for breaches of these Regulations.

The Minister desires to call the attention of sportsmen to the fact that a close season existed for ducks, geese, scrub and plain turkeys, quail, and other feathered game until the 30th April. The season opens on the 1st May, and will extend until the 30th September next in Southern Queensland. In the Central district the open season for the birds referred to extends from the 1st July to the 30th November, and in North Queensland from the 1st June to the 30th October.

A limitation is also placed on the number of ducks, geese, quail, turkeys, and plover secured by any one person in twenty-four hours during the open season.

Acquisition of Arrowroot and Arrowroot Flour.

The Governor in Council has approved of the issue of an Order in Council under "*The Primary Producers' Organisation and Marketing Acts*, 1926 *to* 1930," giving notice of intention to provide and declare that the commodities known as arrowroot bulbs and arrowroot flour shall be divested from the growers and become vested in and be the property of the Arrowroot Board.

The Arrowroot Board was established in 1922, and first had control of arrowroot bulbs only. In 1928, arrowroot was declared to be a commodity for the purposes of the Primary Producers' Organisation and Marketing Acts, and in 1931 the Arrowroot Board was empowered by Order in Council to handle arrowroot flour. The present Board therefore controls both the blubs and the flour.

A representative petition has been received from the growers and millers asking that the Board be given the ownership of all bulbs and flour.

The Order in Council issued accordingly gives notice of the intention of the Governor in Council to vest in the Arrowroot Board the ownership of all arrowroot bulbs and arrowroot flour. The notice provides for a petition to be lodged on or before the 9th May, signed by not less than twenty-five growers of arrowroot who in the last preceding season supplied arrowroot bulbs grown in Queensland to any arrowroot mill in the State, requesting that a vote of such growers may be taken on the question of whether arrowroot bulbs shall be vested in the Arrowroot Board as the owners thereof.

Provision is also made for another petition, to be lodged also on or before the 9th May, requesting that a vote may be taken as to whether the ownership of arrowroot flour shall be vested in the Arrowroot Board. This latter petition is to be signed by not less than twenty-five persons, and the qualification for signing is a person who manufactured arrowroot flour at any time within the last twelve months, and any person who supplied arrowroot bulbs grown by himself in Queensland to any arrowroot mill at any time during the past twelve months.

Pig Raising Instructional Tour.

The Minister for Agriculture and Stock (Hon. H. F. Walker) has arranged for an instructional tour of North Queensland pig-breeding areas by the Senior Instructor in Pig Raising, Mr. E. J. Shelton, H.D.A.

Mr. Shelton's itinerary, which commenced on 26th April, covers several centres on the Atherton Tableland, in additon to several other areas to be visited en route to and from the Tableland proper. Visits will be paid to the North Queensland Co-operative Bacon Factory at Mareeba, the State Farm at Kairi, the maize-growing centres around Atherton, to the Silkwood district, where dairying and pig breeding are now making rapid headway, and to the colleges at Charters Towers, where a course in agriculture has recently been instituted.

In addition to visiting the Rural schools and the principal State schools where addresses will be given to boy and girl members of Home Project Clubs (Pig Clubs, &c.), a series of lantern lectures will be given at which farmers, their wives and families, including Club members, and others interested will be heartily welcomed, while, as opportunity offers, visits will be paid to the farms of those most interested.

The tour is being arranged in co-operation with the Northern Pig Board, the North Queensland Co-operative Bacon Association, Limited, and the Atherton Tableland Maize Board.

Payable Pig Keeping.

Writing of his experiences in following up instructions given by the Departmental Instructors in Pig Raising in Queensland, a progressive Atherton Tableland farmer says:—

"We are going along steadily, and fortunately have had fairly good rains so that the country is looking fine. I must thank you for all you have done to assist us in our endeavours to make pigs pay. Despite the heavy fall in prices we have not cut down our herd as many have done, and for the period June, 1930, to 1931, we turned off seventy-seven fat pigs, receiving for these £180. We purchased 2 tons of corn and five bags of meat meal, and about £15 worth of molasses, or, in all, a total of about £30 worth of feed. All the rest of the feed was produced on the farm, and even the quantity that had been purchased could have been produced locally if we had additional labour and plant. A great many of our pigs were sold at 4½d. per lb., a very low price. From June to December, 1931, we sent away forty-six and had forty-two on hand. The forty-six should average £2 per pig.

"We have found the paddock system of keeping pigs with plenty of Kikuyu grass far ahead of small runs and no grass.

"We have three 1½-acre paddocks for stores. For brood sows we have a cow paddock of 30 acres fenced in; just put two extra barbed wires round the bottom and these pigs take little to keep them in good condition.

"The store pigs we found rooted the paddocks badly, so we now cut off the nose points (top of gristle on snout) with a special cutter and save the grass a lot. It does not seem to put the pigs back and saves both grass and fences from destruction. We do them at about two months old.

"We have found portable feeding floors a great help in handling generally. There are two on each area, and with one more each we can handle all the store pigs with ease. These portable floors are very handy for feeding grain and slop food and are easily kept clean, and, above all, the pigs cannot tip you over when feeding. We have three portable sheds, and wish all our sheds were made like these. We keep a supply of mineral lick in most paddocks and, although the pigs do not use much, it goes gradually. Undoubtedly protein feed for the dry time to balance the corn ration is one of our greatest problems in the North. We have not had much lucerne so far, but intend trying it again this season.

"Our pig troughs have been built to a new design which leaves nothing to be desired. They are easily tipped, and being portable on the floors can be shifted by a pair of horses as required. We spread dry feed the whole length of these troughs without waste, and thirty pigs up to 140 lb. can feed on this floor.

"The troughs can be tipped up to keep pigs out and to keep dry when not in use. In wet weather water is tipped outside away from pigs, and with a little concrete or metal on the pathway where the pigs enter the feeding floor, the floor would always be clean.

"The portable houses are made of variable sizes—from 6 feet by 6 feet to 14 feet by 8 feet. Several neighbours are now following my example in the construction of portable houses and feeding floors."

International Gathering of Sugar Technologists in Queensland.

The Minister for Agriculture (Mr. H. F. Walker) has received a cablegram from Mr. Bell, the Queensland Government representative at the Conference of the International Society of Sugar Cane Technologists, at Porto Rico, West Indies, to the effect that Conference has agreed that the next conference shall be held in Queensland in 1935, that Dr. A. J. Gibson, of Bingera, would be the President of the Conference, and Mr. Norman Bennett, now of the Racecourse Mill, would be the Secretary.

These Sugar Conferences are attended by representatives from all the chief sugar-producing countries of the world, and are held every three years. The 1929 Conference was held in Java.

Pig Raising School at Gatton.

The fifth Annual School of Instruction for farmers, their sons, and others interested is to be held this year at Gatton College from 20th June to 2nd July, both days inclusive.

These schools have been organised to provide the means whereby farmers, their sons, and others desirous of improving their knowledge of pig breeding may come together at a convenient centre for practical demonstrations, lectures, and indoor studies on every phase of pig raising.

Professor Murray advises that there need be no anxiety on the part of the farming community with regard to the attendance at this school by members of their families, for provision has been made for accommodation, meals, and recreation. The social side of the life of these schools is a special feature, while every evening before the lecture session begins opportunity is afforded for a free and easy hour for questions and answers, during which questions relative to any phase of agriculture may be asked. At these sessions officers attend who are interested in other branches of College life, such as the Instructor in Animal Husbandry, the Plant Breeder, and the Horticulturist; in fact, question time is one of the most interesting periods of the day for those interested in dairying and fruit growing, as well as in general agriculture.

The evening cinematograph and lantern lectures are also of great interest. As opportunity offers, prominent authorities on agriculture attend to address school members. Illustrated lectures on tuberculosis in cattle and pigs; poisonous weeds and plants; farm bookkeeping, as well as outdoor talks on various types of agricultural and dairy machinery; visits to the College dairy and inspection of the cattle, horses, and poultry are of interest and are all included in the course. The school will also be visited by members of the Queensland Pig Industry Committee and of the Queensland Branch of the Australian Stud Pig Breeders' Society.

At the College more than 300 pigs are kept. These comprise representatives of several breeds, and they are bred for stud purposes as well as for the production of pork and bacon. An extensive series of experiments in the breeding and feeding of pigs has been added to the activities of the pig section. Considerable interest has been displayed in the results of crossing the various breeds, and this section should be of considerable interest to those attending this year's school. Several lectures will be arranged to indicate just what is being done, for the object is to test under farm conditions the prolificacy, suitability, early maturity, and economy of production of various types of pigs. The pig section, therefore, is one of great educational value and one in which farmers generally will be interested.

An added attraction in the school programme is a visit of inspection to the metropolitan bacon factories, while the various operations associated with the manufacture of pork products are in full swing. This year it is also proposed to include a visit to the Brisbane Abattoir and Stock Saleyards at Cannon Hill. While in the city a visit is also to be paid to the Department of Agriculture and Stock, to the milk and cream testing and agricultural chemist's laboratories, and the entomological museum.

The fees for the course are exceptionally reasonable, and concession fares on the railways are available to those attending. Further particulars may be obtained by writing to the Principal, Queensland Agricultural High School and College, T.P.O., South, or from the Department of Agriculture and Stock, Brisbane. Carefully note and reserve the school dates—20th June to 2nd July, 1932. Early application is necessary.

Egg Marketing.

The Minister for Agriculture and Stock (Mr. H. F. Walker) announced recently that a deputation comprising some of those who are engaged in the production of eggs had waited upon him and had criticised some of the actions taken by the Board in the disposal of the eggs marketed through the Pool.

In his reply to the deputation he mentioned that he would arrange for the Director of Marketing (Mr. E. Graham) to make an examination of and furnish a report upon the methods followed by the Board in respect of the marketing of eggs, and particularly those matters that had been made the subject of criticism by the deputation. A report had been furnished by the Director of Marketing covering the matters of complaint, and, *inter alia*, it was stated therein that the Board in the disposal of eggs utilises the local, interstate, and overseas markets. For the purpose of sales on the local market, the Board had appointed and accredited certain produce agents, and it is permissible for growers to deliver eggs either direct to the Board or to the authorised agents of the Board. A commission, at the rate of 7½ per cent. on sales is charged by the agents or the Board respectively.

The first egg pool was formed in 1923, and the present pool as now constituted expires by effluxion of time on the 31st December, 1933. The volume of production of eggs is considerable, the yield during the year 1930 being 5,588,081 dozen. Production has increased since the inception of the pooling system. The average production over a five years' period immediately prior to the formation of the pool was 3,032,000 dozen, while the average production throughout the quintennial period under pool control was 5,062,000 dozen, or a comparative increase of more than 2,000,000 dozen per annum.

One of the chief sources of complaint arises out of the levies and contribution to the Equalisation Fund inaugurated by the Board.

Particulars of the rate and purposes of these deductions are as follows:—

(1) A levy on eggs is struck at the rate of one halfpenny per dozen to cover the costs of administration of the pool.

(2) A deduction at the rate of one penny per dozen is made to provide means to allow of the equalisation of the price paid to growers and to meet contingencies incidental to the marketing and selling of the eggs.

Growers raising objection to reasonable deductions have evidently failed to appreciate that the Board has not been provided by the growers individually or the industry collectively with any special source of finance, and for business purposes the Board has to rely on advances that may be obtained from financial institutions on the security of the product.

The Board has preforce to engage largely in the export trade in eggs. The eggs are carefully selected and graded. Every egg is candled and packed in containers of uniform design. Cold storage, transport, commission on sales, and insurance charges have to be met. In the aggregate the charges to be defrayed by the Board in connection with the eggs exported are considerable, and, in practice, not less than three months' period intervenes between the time of shipment of the eggs and the receipt of account sales.

In the interim, the payment to the growers for the eggs supplied has to be effected by the Board. The export trade reaches important proportions, and this season more than 25,000 cases each containing 30 dozen of eggs were consigned overseas.

It is readily seen that in the maintenance of a staff requisite to perform the essential services of the pool and to meet generally the costs of carrying out the marketing of eggs through local, oversea, and interstate channels, and to cover the Board against the risk of discrepancies in trade, a considerable sum of money must at all times be at the command of the Board.

The money represented in equalisation deductions by the Board is not necessarily permanently withheld or lost to the growers, and in cases where the trade has resulted in profit, the money obtained in this way is ultimately handed to the growers concerned. For instance, the Board derived a surplus of £5,808 9s. 4d. from the export trade in eggs last season, and this sum was distributed pro rata amongst the growers supplying that particular class of egg to the pool.

Should it be the case that profit to the pool eventuates as a result of this season's trading, the growers will benefit accordingly.

It is the case that some of the growers decrying both the pooling system and the business methods of the Board have never supplied eggs to the pool or contributed towards its upkeep in any way.

Farm Notes for June.

FIELD.—Winter has set in, and frosts will already have been experienced in some of the more exposed districts of the Maranoa and Darling Downs. Hence insect pests will to a great extent cease from troubling, and weeds will also be no serious drawback to cultivation. Wheat sowing should now be in full swing, and in connection with this important operation should be emphasised the necessity of at all times treating seed wheat by means of fungicides prior to sowing. Full directions for "pickling" wheat by copper carbonate treatment are available on application to the Department of Agriculture, Brisbane. Land intended for the production of early summer crops may now receive its preliminary preparation, and every opportunity taken advantage of to conserve moisture in the form of rainfall where experienced; more particularly so where it is intended to plant potatoes or early maize. Where frosts are not to be feared the planting of potatoes may take place in mid-July; but August is the recognised month for this operation. Arrowroot will be nearly ready for digging, but we would not advise taking up the bulbs until the frosts of July have occurred. Take up sweet potatoes, yams, and ginger. Should there be a heavy crop, and consequently a glut in the market, sweet potatoes may be kept by storing them under cover and in a cool place in dry sand, taking care that they are thoroughly ripe before digging. The ripeness may be known by the milky juice of a broken tuber remaining white when dry. Should the juice turn dark, the potato is unripe, and will rot or dry up and shrivel in the sand pit. Before pitting, spread the tubers out in a dry barn, or in the open if the weather be fine. In pitting them or storing them in hills, lay them on a thick layer of sand; then pour dry sand over them till all the crevices are filled and a layer of sand is formed above them; then put down another layer of tubers, and repeat the process until the hill is of the requisite size, and finally cover with either straw or fresh hay. The sand excludes the air, and the potatoes will keep right through the winter. In tropical Queensland the bulk of the coffee crop should be off by the end of July. Yams may be unearthed. Sugar-cane cutting may be commenced. Keep the cultivator moving amongst the pineapples. Gather all ripe bananas.

Cotton crops are now fast approaching the final stage of harvesting. Growers are advised that all bales and bags should be legibly branded with the owners' initials. In this matter the consignor is usually most careless, causing much delay and trouble in identifying parcels, which are frequently received minus address labels.

Orchard Notes for June.

THE COASTAL DISTRICTS.

THE remarks that have appeared in these notes for the past two months apply in a great measure to June as well, as the advice that has been given regarding the handling, grading, packing, and marketing of the citrus crop still holds good. As the weather gets cooler the losses due to the ravages of fruit flies decrease, as these insects cannot stand cold weather, and consequently there is only an odd one about. The absence of flies does not, however, permit of any relaxation in the care that must be taken with the fruit, even though there may be many less injured fruit, owing to the absence of fruit-fly puncture, as there is always a percentage of damaged fruit which is liable to speck, which must be picked out from all consignments before they are sent to the Southern States if a satisfactory return is to be expected. If the weather is dry, citrus orchards must be kept in a good state of tilth, otherwise the trees may get a setback. Old worn-out trees can be dug out and burnt; be sure, however to see that they *are* worn out, as many an old and apparently useless tree can be brought round and made to bear good crops, provided the trunk and main roots are still sound, even though the top of the tree is more or less dead. The whole of the top of the tree should be cut off and only the trunk and such sound main limbs left as are required to make a new head. The earth should be taken away from around the collar of the tree, and the main roots exposed, any dead roots being cut away and removed. The whole of the tree above ground and the main roots should then be dressed with a strong lime sulphur wash or Bordeaux paste. The main roots should be exposed for some time, not opened up and filled in at once. Young orchards can be set out now, provided the ground is in good order. Don't make the mistake of planting the trees in improperly prepared land—it is far better to wait till the land is ready, and you can rest assured it will pay to do so in the long run.

When planting, see that the centre of the hole is slightly higher than the sides, so that the roots, when spread out, will have a downward, not an upward, tendency; set the tree at as nearly as possible the same depth as it was when growing in the nursery, cut off all broken or bruised roots, and spread those that remain evenly, and cover them with fine top soil. If the land is dry the tree should then be given a good watering, and when the water has soaked in the hole can be filled up with dry soil. This is far better than watering the tree after the soil has been placed round it and the hole filled up. Custard applies will be ripening more slowly as the nights get colder. If the weather becomes unduly cold, or if immature fruit is sent South, the fruit is apt to turn black and be of no value. This can easily be overcome by subjecting the fruit to artificial heat, as is done in the case of bananas, during the cooler part of the year, when it will ripen up properly and develop its flavour. Grade custard apples carefully, and pack in cases holding a single layer of fruit only for the Southern markets.

Pineapples, when at all likely to be injured by frost, should be protected by a thin covering of bush hay or similar material. The plantation should be kept well worked and free from weeds, and slow acting manure, such as bonedust or island phosphates, can be applied now. Lime can also be applied when necessary. The fruit takes longer to mature at this time of the year, consequently it can be allowed to remain on the plant till partly coloured before gathering for the Southern markets, or can be fully coloured for local use.

Banana plantations must be kept worked and free from weeds, especially if the weather is dry, as a severe check to the plants now means small fruit later on. Bananas should be allowed to become full before the fruit is cut, as they will carry all right at this time of the year; in fact there is more danger of their being injured by cold when passing through New England by train than there is of their ripening up too quickly.

Bear in mind the advice given with regard to the handling, grading, and packing of the fruit. It will pay you to do so. Land intended for planting with bananas or pineapples during the spring should be got ready now.

Strawberries require constant attention, and, unless there is a regular and abundant rainfall, they should be watered regularly. In fact, in normal seasons an adequate supply of water is essential, as the plants soon suffer from dry weather or strong, cold westerly winds. Where not already done, vineyards should be cleaned up ready for pruning—it is, however, too early to prune or to plant out new vineyards.

THE GRANITE BELT, SOUTHERN AND CENTRAL TABLELANDS.

ALL kinds of deciduous fruit trees are now ready for pruning, and this is the principal work of the month in the orchards of the Granite Belt area. Don't be frightened to thin out young trees properly, or to cut back hard—many good trees are ruined by insufficient or bad pruning during the first three years. If you do not know how to prune, do not touch your trees, but get practical advice and instructions from one or other of the Departmental officers stationed in the district. In old orchards do not have too much bearing wood; cut out severely, especially in the case of peaches, or you are likely to get a quantity of small unsaleable fruit. There are far too many useless and unprofitable fruit trees in the Granite Belt area, which are nothing more or less than breeding-grounds for pests, such as fruit fly, and are a menace to the district. Now is the time to get rid of them. If such trees are old and worn out, take them out and burn them, but if they are still vigorous, cut all the tops off and work them over with better varieties in the coming season—apples by grafting in spring and peaches and other stone fruits by budding on to young growth in summer. Planting can start now, where the land is ready and the trees are to hand, as early planted trees become well established before spring, and thus get a good start. Be very careful what you plant. Stick to varieties of proved merit, and few at that, and give so-called novelties and inferior sorts a wide berth. Take the advice of old growers, and do not waste time experimenting with sorts that have probably been tested in the district and turned down years ago. When land is intended for planting this season, see that it is well prepared and well sweetened before the trees are put in, as young trees seldom make a good start when planted in sour and badly prepared land.

Slowly acting manures—such as bonedust, meatworks manure, or island phosphates—can be applied now, as they are not liable to be washed out of the soil, and they will be available for the use of the trees when they start growth in spring.

Lime can also be applied where required. Badly drained land should be attended to, as no fruit trees will thrive with stagnant water lying round their roots.

On the Downs and Tableland all kinds of fruit trees can be pruned now, and vines can be pruned also in any district where there is no danger from late frosts, and where this can be done the prunings should be gathered and burnt, and the vineyard ploughed up and well worked to reduce the soil to a good state of tilth, so that should rain come it will absorb all that falls and the moisture can be kept in the soil by cultivation subsequently.

Citrus fruits will be at their best in the Western districts. The trees should be watered if they show signs of distress, otherwise all that is necessary is to keep the surface of the land well worked. All main-crop lemons should be cut by this time, as, if allowed to remain longer on the tree, they only become overgrown and are more suitable for the manufacture of peel, whereas if cut and cased now they will keep in good order so that they can be used during the hot weather.

NOTICE TO SUBSCRIBERS.
SPECIAL AND IMPORTANT.

Under the Commonwealth Postal Regulations it is NO LONGER PERMISSIBLE to indicate the expiry of subscriptions with a BLUE CROSS on the first page of the Journal. So in the future that reminder will NOT appear.

The need for the strictest economy makes any other form of reminder at present impracticable. THE ONUS OF REMEMBERING THE DATE OF EXPIRY OF, AND RENEWING THE SUBSCRIPTION PROMPTLY IS, THEREFORE, PLACED ON EACH SUBSCRIBER.

As about 1,000 subscriptions expire each month, the cost of a postal reminder is, in present circumstances, prohibitive. Readers will, therefore, appreciate that fact, and will, no doubt, help us to retain their names on our mailing list by kindly noting the date of payment of their subscriptions and, on expiry, sending in their renewals at once.

Instead of just sending the annual subscription—one shilling—along, it is suggested that, when renewing, they do so for two or three years, or even a longer term. For instance, FIVE SHILLINGS would keep a name on our subscribers' register for FIVE YEARS.

By doing this subscribers would help greatly in reducing clerical labour, as well as avoid the inconvenience to themselves of posting annually the very small sum necessary for their registration.

Readers renewing their subscriptions should USE THE ORDER FORM on another page, which should be filled in FULLY and CORRECTLY. Renewals by letter do not as a rule give the essential information, thereby causing unnecessary waste of time and much inconvenience. The Form is also our record, and orders which come by letter require special handling to adapt them to our card recording system.

When an address on the Order Form is not that to which the Journal has hitherto been sent, attention should be called to the new address, and the former address given. This assists us to identify subscribers, of whom we have many of the same name, often in the same district, as well as in different parts of the State.

Women subscribers should add to their names the word "Mrs." or "Miss," as the case may be. This is a constantly recurring omission, and its correction causes a lot of unnecessary labour in checking electoral rolls and other references. Wives and children of subscribers should apply in the subscriber's name, and so facilitate registration.

The Home and the Garden.

OUR BABIES.

Under this heading a series of short articles by the Medical and Nursing Staff of the Queensland Baby Clinics, dealing with the welfare and care of babies, has been planned in the hope of maintaining their health, increasing their happiness, and decreasing the number of avoidable cases of infant mortality.

HOME ECONOMY.

ALTHOUGH, as wives and daughters of primary producers, it was nothing new for them to economise in many directions, it was never so essential that they should keep down costs, pointed out Mrs. P. T. Whiteman in a talk on home economies at a women's session of the recent State Conference of the New South Wales Agricultural Bureau. Some interesting points were made by the speaker, who first cautioned her hearers against extravagance with respect to the capital represented by good health. Extra work coupled with serious worry would, if they allowed it, undermine health to a very marked extent, and its conservation must be their primary economy.

The kitchen should be bright and convenient—cheerful surroundings added to the ease and efficiency with which work could be accomplished, and a little time and trouble expended in planning and arranging a kitchen meant in the long run economy of time, and often of temper.

"Frequently when I am doing my everyday work," said the speaker, "I have a 'brain-wave' as to how I could save a little time or money by using a little more initiative, and I am sure you all have the same inspirations at times. The great thing in such cases is to try to put the plan into practice as soon as possible—experiment with it as our husbands do with new varieties or farming methods. These economy schemes are useful apart from the money they save, in that they help to develop in the individual a creative and constructive mind, and at the same time they help to maintain the home atmosphere so vital to our well-being."

Wisdom in Spending.

"Many women imagine that the bargain sale is the home of economy, but often the bargain sale is a menace to our pockets. We must always remember that nothing is a bargain unless we require it—how many of us have been tempted at a sale to buy articles in additon to those we set out to buy because we happened to have the cash in our pockets? How many of us have found that by the time we come to use those articles, their selling price was lower than the price we paid for them. Remember there is a wealth of difference between wise purchasing and bargain hunting. If we have any ready money at the moment we should keep it in circulation by spending it wisely—thus helping to keep people in employment. When no money is available we should use all our initiative to develop avenues through which we can make the very best of all the resources at our command."

Points in Economy.

The following avenues to economy were suggested:—

1. Paying greater attention to efficiently run side lines on the farm.

2. Planning one's housework so that one can get through it quickly and thoroughly without expending too much energy, thus giving time to employ in profitable hobbies.

3. Guarding against waste in cooking, in purchasing, and in general care of possessions.

4. Studying food values, so that the maximum nutrition can be gained from the foods bought and grown.

5. Learning to develop any tastes one possesses in home crafts.

6. Watching for suitable markets for surplus farm products.

7. Helping those around by passing on, unstintingly, any useful hints on the subjects mentioned above.

Further point was given to Mrs. Whiteman's address by an exhibit showing the various domestic uses to which very ordinary materials can be put.

TOMATO SEED SELECTION.

In selecting tomatoes from which seed is to be saved, only that from the best yielding plants which conform strictly to the characteristics of the variety, both as regards type of vine and type of fruit, should be chosen. Several fruit should be cut open to be sure of the quality. A plant should be chosen that produces a large number of average size tomatoes rather than a plant with two or three large fruits and a number of small ones. Care should be taken to see that the plant is free from disease, as several tomato diseases are transmitted by the seeds.

The best method of separating tomato seed from the surrounding pulp is as follows:—Cut the fruit in halves and scoop the contents into a bucket, and when the latter is about half full, fill up with water. Stand the bucket aside and allow the contents to ferment, which will take from two to six days, according to the warmth of the weather. A froth forms on top of the water when fermentation is sufficiently advanced. Wash the contents of the bucket on a fine sieve or a layer of hessian and the pulp will come right away from the seed, which must be spread out in a thin layer to dry. Rapid drying is important to prevent moulding. When dry, rub the seed in the hands to separate the individual seeds. Seed harvested in this manner has averaged 94 per cent. germination.

As already indicated, selection from a plant which is free from disease is important, but as a further precaution the seeds should be dipped for ten minutes in a solution of mercuric chloride, 1 part in 1,000 parts of water, before planting. Proper precautions must be taken with mercuric chloride where there are children or animals, as it is highly poisonous if taken internally.

THE FARM VEGETABLE GARDEN.

The question of drainage should be considered in relation to all classes of soil, but especially in relation to those that are at all heavy. Neglect to make the necessary provision on such soils explains many failures to get good results from them during the winter months. Now is the time to think of the question of treatment.

Briefly, the objects of drainage are (1) to enable as much water as possible to percolate through the soil, and (2) to prevent the lodgment and stagnation of water on the soil surface by enabling excess quantities of water to be carried away with ease. It is especially necessary, of course, to drain clay soils. If water is allowed to remain on these for long they tend to "puddle," but if the water is drained away the soil does not become so compacted, retaining, instead, a more friable (crumbly) and porous condition.

Drainage may be of two kinds—surface or underground; the latter is the more effective, but it entails more labour and expense. A simple surface drainage scheme consists of shallow trenches running between plot and pathway, and connected up to an outlet at a suitable point. A modified form of surface drainage is expressed in a system of raised beds. Where some form of drainage is necessary, and the installation of the underground system is impossible, either of these methods is to be commended.

Underground drainage necessitates a considerable amount of trench digging. On what plan it is advisable to set out the drains will depend upon the size and contour of the area. In some cases a herring-bone design may be applicable, the main trench forming the backbone, so to speak, and running through the lowest portion of the land and the smaller contributory trenches spreading upward from this. In other cases it may only be necessary to feed the main trench from one

side, while in others again main trenches may best be laid at the edges of the area and fed from the centre. These trenches may then be partially filled with broken stones, and the surface of the filling protected with a layer of tin or brushwood, so that the earth with which it is subsequently overlaid may not drop through and destroy the porous character of the filling.

A drain provided with this rubble filling is usually the most convenient to make, and is quite effective; but a roughly-built conduit or channel may take the place of the broken stones, if desired. This may be made of flat stones or bricks, or (failing either of these) of boards. Only the sides and top need be formed of these materials, the trench floor serving for the bottom. The stones or bricks, or whatever is used, should only be loosely laid together, so that water may fall into the trench through them and be carried off. In country gardens, where saplings are easily available, these may be used effectively in the bottom of the trench (say a foot deep), covered by a 6-inch layer of brushwood.

The depth at which the drain should lie will depend upon the class of soil, but, needless to say, it should be sufficiently deep to allow of cultivation above it. If there is difficulty in arranging this the scheme should be so adjusted that the drain runs underneath the garden pathways, and not under the beds proper; 2 ft. 6 in. to 3 ft. is usually a satisfactory depth at which to lay a drain in the ordinary household plot.

There is little necessity for drainage on sandy soils, but gardeners working on land of a heavier character should set to work now to repair any deficiency in this direction. If the contour of the plot is regular it is not necessary to do the work all at once. As a section of the plot becomes vacant opportunity may be taken to carry out drainage work on it prior to preparing it for another planting. Then, when each section of the garden has been dealt with, the scheme can be connected up.—A. and P. Notes, N.S.W. Department of Agriculture.

KITCHEN GARDEN.

Cabbage, cauliflower, and lettuce may be planted out as they become large enough. Plant asparagus and rhubarb in well-prepared beds in rows. In planting rhubarb it will probably be found more profitable to buy the crowns than to grow them from seed, and the same remark applies to asparagus.

Sow cabbage, red cabbage, peas, lettuce, broad beans, carrots, radish, turnip, beet, leeks, and herbs of various kinds, such as sage, thyme, mint, &c. Eschalots, if ready, may be transplanted; and in cool districts horse radish can be set out.

The earlier sowings of all root crops should now be ready to thin out, if this has not been already attended to.

Keep down the weeds among the growing crops by a free use of the hoe and cultivator.

The weather is generally dry at this time of the year, so the more thorough the cultivation the better for the crops.

Tomatoes intended to be planted out when the weather gets warmer may be sown towards the end of the month in a frame where the young plants will be protected from frost.

A REMINDER TO ONION GROWERS.

Onion seed growers should, by this, have gone through their selected onions with the object of picking out the best keepers for the production of seed. The bulk of these onions should have been selected, previous to storing, for early maturity and variety characteristics. At the final selection bulbs that are soft or prematurely shooting, or those showing any indication of being bad keepers, or that are diseased, should be discarded.

The bulbs should be planted in rows at least 3 feet apart and spaced 2 feet apart in the rows. A handy position well protected from the boisterous winter winds should be selected for the growing of onion seed.

ASTRONOMICAL DATA FOR QUEENSLAND.

TIMES COMPUTED BY D. EGLINTON, F.R.A.S., AND A. C. EGLINTON.

TIMES OF SUNRISE, SUNSET, AND MOONRISE.

AT WARWICK.

	May, 1932.		June. 1932.		MOONRISE. May, 1932.	June, 1932.
Date.	Rises.	Sets.	Rises.	Sets.	Rises.	Rises.
					a.m.	a.m.
1	6.22	5.16	6.40	5.0	2.9	3.32
2	6.22	5.15	6.40	5.0	3.1	4.28
3	6.23	5.14	6.40	5.0	3.53	5.24
4	6.23	5.13	6.41	5.0	4.45	6.19
5	6.24	5.13	6.41	5.0	5.38	7.15
6	6.24	5.12	6.41	5.0	6.34	8.8
7	6.25	5.11	6.42	5.0	7.29	9.1
8	6.25	5.11	6.42	4.59	8.25	9.49
9	6.26	5.10	6.42	4.59	9.19	10.30
10	6.26	5.9	6.43	4.59	10.13	11.6
11	6.27	5.9	6.43	4.59	11.4	11.41
					p.m.	p.m.
12	6.27	5.8	6.43	4.59	11.48	12.11
					p.m.	
13	6.28	5.8	6.44	4.59	12.29	12.44
14	6.29	5.7	6.44	4.59	1.5	1.19
15	6.29	5.7	6.44	4.59	1.38	1.57
16	6.30	5.6	6.45	4.59	2.11	2.39
17	6.30	5.6	6.45	5.0	2.45	3.34
18	6.31	5.6	6.45	5.0	3.22	4.34
19	6.31	5.5	6.45	5.0	4.1	5.39
20	6.32	5.5	6.46	5.0	4.53	6.45
21	6.33	5.4	6.46	5.1	5.52	7.50
22	6.33	5.4	6.46	5.1	6.55	8.54
23	6.34	5.3	6.46	5.1	7.59	9.52
24	6.35	5.3	6.47	5.1	9.4	10.46
25	6.35	5.3	6.47	5.2	10.7	11.40
26	6.36	5.2	6.47	5.2	11.6	...
						a.m.
27	6.37	5.2	6.47	5.2	...	12.33
					a.m.	
28	6.38	5.2	6.47	5.3	12.3	1.25
29	6.38	5.1	6.47	5.3	12.56	2.20
30	6.39	5.1	6.47	5.3	1.49	3.23
31	6.40	5.5	...	...	2.39	...

Phases of the Moon, Occultations, &c.

6 May	●	New Moon	4 12 a.m.
14 „	☾	First Quarter	12 2 a.m.
20 „	○	Full Moon	3 8 p.m.
27 „	☽	Last Quarter	2 55 p.m.

Apogee, 4th May, 5.48 p.m.
Perigee, 19th May, 4.0 p.m.

When the Moon rises about 4.45 a.m. at Warwick it will be only about 3 degrees from the planet Uranus.

On the 6th, when Mercury rises about 4.30 a.m., Uranus will be apparently only about 2½ degrees to the northward of it, but telescope or binoculars will be required to bring Uranus into view.

The Moon will pass near to Neptune on the 14th at 10 p.m. With optical aid Neptune may be seen 1 degree south of the Moon, and about 6 degrees, or the length of the Southern Cross, eastward of Regulus, the principal star in Leo.

About 5 o'clock in the morning of the 18th the planets Mercury and Mars will be only about 2½ degrees, or 5 diameters of the Moon apart. They will form an interesting spectacle in the east-north-east for those who are up before daybreak.

On the 25th, about 3 a.m., the Moon will be passing from west to east of Saturn. It will be interesting to notice, as Saturn will be 4 degrees to the northward of the Moon and both objects not far from the meridian, that the planet will be almost directly overhead at Townsville, and the Moon nearly in the same position with regard to Rockhamptiou.

Venus will be apparently amongst the stars of Taurus from 1st April to 7th May, and in Gemini to the 31st of May. Jupiter will be in Cancer, apparently, till 28th May; and Saturn in Capricornus, with little change, throughout the two months.

Mercury will rise at 4.28 a.m. and set at 4.10 p.m. on the 1st; on the 15th it will rise at 4.31 a.m. and set at 3.55 p.m.

Venus will set at 7.58 p.m. on the 1st, and at 7.53 p.m. on the 15th.

Mars will rise at 4.54 a.m. on the 1st, and at 4.48 a.m. on the 15th.

Jupiter will rise at 1 p.m., and set at 11.42 p.m. on the 1st; on the 15th it will rise at 12.9 p.m., and set at 10.53 p.m.

Saturn will rise at 11.3 p.m. and set at 12.27 p.m. on the 1st; on the 15th it will rise at 10.8 p.m., and set at 11.34 a.m.

The Southern Cross will be at position IX., 30 degrees east of south, at 6 p.m. on 1st April, and at 4 p.m. on 1st May. It will be upright, due south, at midnight on April 1st and at 10 p.m. on May 1st.

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4 June	●	New Moon	7 16 p.m.
12 „	☾	First Quarter	7 39 a.m.
18 „	○	Full Moon	10 38 p.m.
26 „	☽	Last Quarter	6 36 a.m.

Perigee, 16th June, at 12.10 a.m.
Apogee, 28th June, at 7.0 p.m.

Mercury will be in conjunction with the Moon (technically) on the 3rd, about five hours after setting; there will then be the unusual distance of 6 degrees, the length of the Southern Cross, between them.

For places west of Warwick and nearly in the same latitude, 28 degrees 23 minutes S. add 4 minutes for each degree of longitude. For example, at Inglewood, add 4 minutes to the times given above for Warwick; at Goondiwindi, add 8 minutes; at St. George, 14 minutes; at Cunnamulla, 25 minutes; at Thargomindah, 33 minutes; and at Oontoo, 43 minutes.

The moonlight nights for each month can best be ascertained by noticing the dates when the moon will be in the first quarter and when full. In the latter case the moon will rise somewhat about the time the sun sets, and the moonlight then extends all through the night; when at the first quarter the moon rises somewhat about six hours before the sun sets, and it is moonlight only till about midnight. After full moon it will be later each evening before it rises, and when in the last quarter it will not generally rise till after midnight.

It must be remembered that the times referred to are only roughly approximate, as the relative positions of the sun and moon vary considerably.

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